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1906.

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,,	,,	203–268	,, ,,	xlix–l	9th July	,,
,,	,,	296–336	,, ,,	li–lii	4th August	,,
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,,	,,	383–466	,, ,,	lv–lviii	22nd November	,,
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ERRATA.

Page 111 *line* 3: delete the number 1 after Polyzoa. (The footnote refers to Opercularia nutans only.)

„ 187 foot note, *line* 3: *for* " shrimps' nets " *read* " shrimps' nests."

„ 363 *line* 22: *for* Hamilton *read* Buchanan.

„ 368 „ *line* 32, 369 *line* 7 from the bottom; 370 *line* 20; 372 *lines* 2 and 14 from the bottom; 378 *line* 22 and 3 and 4 from the bottom: *for* griesbachiana *read* grisebachiana.

„ 371 „ 15: *for* Maxim, *read* Maxim-

„ 372 *lines* 11 and 8 from the bottom should each be indented to contrast with " Inflorescence dense " above.

„ 373 *line* 9 from the bottom: *for* nomem *read* nomen; *for* mudum *read* nudum.

„ 374 „ 12 from bottom: *for* wall. *read* Wall.

„ 375 „ 2 from bottom: *for* Kiangtsi *read* Kiang-si

„ 377 „ 5 from bottom: *for* 222 *read* 322.

„ 378 *lines* 20 and 23: *for* India *read* Indiæ.

„ 378 „ 28: *for* Honenacker *read* Hohenacker.

„ 381 „ 12: supply " it " after " collected."

„ 496 „ 19 from bottom: *for* Marselia Quadrifoliata *read* Marsilea quadrifolia.

DIRECTIONS FOR BINDING.

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1906.

Issued 26th March, 1906.

List of Officers and Members of Council

OF THE

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A. Earle, Esq., I.C.S.

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J. Macfarlane, Esq.

J. A. Chapman, Esq.

JANUARY 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 3rd January, 1906, at 6-30 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present:—

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1. *Scaphiodon Macmahoni* sp. nov., by Regan, C. Tate, p. 8.
2. *Nemachilus rhadinæus* sp. nov., by Regan. C. Tate. pp. 8-9.

The publications of this Society more nearly represent Dr. Blanford's scientific activity in India than those of the Department of Government of which he was such a distinguished member. Although officially a geologist, his researches extended over much of the related sciences of geography and zoology, and his work in either branch would have been sufficient to mark his name as a prominent worker in Natural History.

Dr. Blanford joined the Asiatic Society in 1859, as an Ordinary Member, and was elected an Honorary Member in 1883, the year after his retirement from the Indian service. Although he was one of the most prolific contributors to the *Journal* during his 27 years' service in India, his continual absence from Calcutta prevented his acceptance of office until 1877, when, having returned to Calcutta to revise the Manual of Indian Geology, he was elected Vice-President of the Society, and during the following two years, 1878 and 1879, filled the office of President. His death on the 23rd June 1905, at the age of 73, removed one of the most distinguished of our members.

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The following members were present:—

Dr N. Annandale, Mr. L. L. Fermor, Babu Amulya Charan Ghosh Vidyābhuṣaṇa, Babu Hemendra Prasad Ghose, Mr. H. H. Hayden, Mr T. H. Holland, Mr. J. Macfarlane, Major D. C. Phillott, 23rd Cav. F.F., Major L. Rogers, I.M.S., Pandit Yogeśa Chandra Śāstree.

The minutes of the last meeting were read and confirmed.

Thirty-five presentations were announced.

It was announced that Mr. R. O. Lees, Mr. F. J. Ede, Mr. W. S. Meyer, Mr. J. Bathgate, and Mr. J. Nicoll had expressed a wish to withdraw from the Society.

Mr. T. H. Holland contributed an obituary notice of the late Dr. W. T. Blanford, and announced the steps already taken to put up a bust in his memory.

W. T. Blanford, A.R.S.M., LL.D., C.I.E., F.R.S.

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Dr. Blanford's first formal contribution to the Society was a paper in conjunction with his brother, forming No. 1 of a series on Indian Malacology read at the general meeting on the 7th March 1860, and published in volume XXIX of the *Journal*. From that time till the Society celebrated its centenary in 1883, nearly every volume of the *Journal* included one or more papers from Blanford, describing observations made in every province of India, and from beyond the frontier in Persia and Turkistan as well as Abyssinia—a record of 74 papers dealing purely with original work. The *Journal* of this Society includes but a fraction of Blanford's work in India. His chief work was geological and palæontological, the results being published either in the *Records* and *Memoirs* of the Geological Survey of India, or in the journals of European scientific societies. Altogether, whilst still in the Indian service, he published just 150 scientific papers, many of which were comprehensive memoirs, not merely details of observation, but contributions to the philosophical aspects of geology and zoology which have made some of his memoirs classical works in the history of science.

After his retirement in 1882, most of the papers he wrote summed up the observations made during his service of 27 years in India; and, with his summaries, he indicated the philosophical bearing of the accumulated mass of data on current scientific doctrines. Amongst publications of this kind, it is only necessary to refer, firstly, to his address to the British Association at Montreal in 1884, when he demonstrated the truth of Huxley's theory of *homotaxis* in the descent of isolated faunas and floras, bringing to a close, at the same time, the disputed question as to the age of the coal-bearing Gondwana system of Indian rocks; and secondly to his address to the Geological Society of London in 1889, when, with reference to the much-debated question of the permanence of oceanic depressions and continental plateaux, he brought together in his inimitable way a mass of isolated and apparently unrelated data to show that, "not only is there clear proof that some land areas lying within continental limits have, at a comparatively recent date, been submerged over 1,000 fathoms, whilst sea-bottoms now over 1,000 fathoms deep must have been land in part of the Tertiary era, but there are a mass of facts, both geological and biological, in favour of land-connection having formerly existed in certain cases across what are now broad and deep oceans."

Possibly the most conspicuous amongst the productions of his scientific activity was his last—his memoir on "The Distribution of Vertebrate Animals in India, Ceylon and Burma," for which he was awarded one of the two Royal medals granted by the Royal Society in 1901. A considerable section of his time during retirement was occupied by the editorship of the official "Fauna of British India," of which he edited 18 volumes,—one on Mammals and two on Birds being entirely his own work.

Those who were favoured by the inestimable privilege of his friendship will readily agree that Blanford's enormous record of

published work was not greater than that which he freely contributed to friends in private correspondence. Amidst his many duties at home, as a prominent official of several scientific societies, he never failed to respond to a question or difficulty presented by the most junior of his successors in the Indian field; no subject appeared to be too small or local to be considered worthy of his earnest attention, and times without number, within the recollection of the writer, by private correspondence he has shown his juniors new lines for profitable research, has pointed out by his unique knowledge of literature and width of experience, the significance of new observations, and has frequently saved his less experienced followers from the pitfalls of hasty deductions drawn from imperfect data in this country, where "a little learning" in Natural History is as dangerous as it is in political and sociological matters.

No reference to Blanford's scientific work would be complete without an allusion to one amongst the many ways in which it has been of economic value to the country to which he devoted his best energies. His geological maps of the coalfields have been, and still are, the guide of colliery managers in Bengal: to their remarkable accuracy has been due the successful opening up of new ground, and the economical planning of works for the development of known deposits in a way which has saved the country many times the cost of his service, and possibly even of the whole Department of Government to which he belonged. And yet there is no prospect of reaching the end of his usefulness: scarcely a month passes without some new illustration of the accuracy of an apparently unimportant line on one of his maps, or of the significance of a seemingly passing thought in his reports on Indian minerals.

Blanford's services to science were naturally recognised in Europe: in 1874 he was elected a Fellow of the Royal Society; in 1881, whilst representing India at the International Geological Congress at Bologna, he was elected a Vice-President of the Congress, and was decorated by the King of Italy with the order of St. Maurice and St. Lazarus. He was also Vice-President of the Congress on three subsequent occasions—Berlin 1885, London 1888, and Paris 1900. On his retirement from the Indian service in 1882, the Geological Society of London conferred on him the highest distinction at their disposal, the Wollaston medal. In 1884 he was elected President of the Geological Section of the British Association at Montreal, and at the same time the McGill University conferred on him the honorary degree of LL.D. He was elected President of the Geological Society of London in 1888, served three times as Vice-President of the Royal Society, and on other occasions as Vice-President of the Zoological and the Royal Geographical Societies. In 1904 the King honoured the Most Eminent Order of the Indian Empire by including Dr. Blanford's name amongst the roll of Companions.

T. H. H.

The General Secretary reported that the Council had made the following appointments :—

1. Pandit Kunja Behari Nyayabhushan, as the Pandit for the Oriental Library of the Society *vice* Pandit Mahendra Nath Mukerjee, resigned.

2. Pandit Asutosh Tarkatirtha, as one of the travelling Pandits, and in his place Pandit Mathura Nath Mazundar Kavyatirtha, as the Resident Pandit, attached to the search for Sanskrit Manuscripts.

Mr. J. A. Chapman, proposed by Dr. E. D. Ross, seconded by Mr. J. Macfarlane, was ballotted for and elected an Ordinary Member.

The Adjourned Meeting of the Society was held on Wednesday, the 10th January, 1906, at 9-15 P M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present :—

Syed Abul Aâs, Mr. C. G. H. Allen, Dr. N. Annandale, Major W. J. Buchanan, I.M.S., Mr. I. H. Burkill, Mr L. L. Fermor, Babu Amulya Charan Ghosh Vidyabhuṣaṇa, Mr. W. A Lee, Dr. M. M. Masoom, Mohamed Hossain Khan Midhut, Major F. P. Maynard, I.M.S., Major D. C. Phillott, 23rd Cav. F F., Mr. G. E. Pilgrim, Pandit Yogeśa Chandra Śastree, Mahamahopadhyaya Haraprasad Shastri, Mr. E. P. Stebbing, Pandit Rajendra Nath Vidyabhuṣaṇa, Mahamahopadhyaya Satis Chandra Vidyabhuṣaṇa, Rev. A. W. Young.

Visitors :—Dr. C. Banks, Syed Chirag Ali, Mr. A. M. Mahfuz, Babu Dwijendra Nath Maitra, Mrs. Maynard, Mr. A. N. Price, Captain Riddick, Mr. W. Withall, and others.

Major L. Rogers gave a lecture on types of fever in Calcutta (lantern demonstration).

The following papers were read :—

1. *Romaka, or the City of Rome, as mentioned in the Ancient Pali and Sanskrit works.*—*By* Mahāmahopādhyāya Satis Chandra Vidyābhūṣhaṇ, M.A.

2. *Two New Cyprinoid Fishes from the Helmand Basin.*—By C. Tate Regan, B A. *Communicated by* Lieut.-Col. A. W. Alcock, C.I.E., F.R.S.

3. *The Origin of Mankind (according to the Lamaic Mythology).*—*By Rai* Sarat Chandra Das, *Bahadur*, C.I.E.

4. *Optimism in Ancient Nyaya.*—*By* Pandit Vanamali Vedantatirtha.

This paper has been published in the *Journal and Proceedings.* N.S., Vol. I, No. 10, 1905.

5. *Persian Folk Songs.*—*By* Major D. C. Phillott, 23rd Cav., F. F.

This paper will be published in a subsequent issue of the *Journal and Proceedings.*

Library.

The following new books have been added to the Library during January 1906 :—

Abdel Aziz Nazmi. La Médecine au temps des Pharaons. Thèse, *etc.*, *Montpellier*, 1903. 8°.

Assam District Gazetteers. *Calcutta*, 1905, *etc.* 8°.

Presd. by the Govt. of Eastern Bengal and Assam.

Baldaeus, Philip. A Description of ye East India Coasts of Malabar and Coromandel, with their adjacent kingdoms and provinces ; and of the Empire of Ceylon and of the Idolatry of the Pagans in the East Indies. [With plates.]
London, 1703. fol.

Balfour, Edward. The Cyclopædia of India and of Eastern and Southern Asia...Third edition. 3 vols.
London, 1885. 8°.

Calcutta.—*Calcutta Madrasah.* Catalogue of the Arabic and Persian Manuscripts...by Kamallu'd-Dîn Aḥmad and 'Abdu 'l-Muqtadir, with an introduction by E. Denison Ross.
Calcutta, 1905. 8°.

Presd. by the Govt. of Bengal.

Carnahan, David Hobart. The Prologue in the old French and Provençal Mystery....A thesis, *etc.* *New Haven*, 1905. 8°.

Presd. by Yale University.

Cirkel, Fritz. Asbestos: its occurrence, exploitation and uses.
Ottawa, 1905. 8°.

———Mica: its occurrence, exploitation and uses.
Ottawa, 1905. 8°.

Presd. by the Dept. of the Interior, Mines Branch, Canada.

Dutt, Romesh. India in the Victorian age: an economic history of the people. *London*, 1904. 8°.

Francke, *Rev.* A. H. First Collection of Tibetan Historical Inscriptions on rock and stone from West Tibet. [In Tibetan.]
1906. 8°.

Francke, *Rev.* A. H. Log-dag-kaye-Ag-bar. Tibetan Paper. Vol. III. [In Tibetan.] [1906.] 4°.

Presd. by the Author.

Frey, H. Les Égyptiens préhistoriques identifiés avec esl Annamites d'après les inscriptions hiéroglyphiques. *Paris*, 1905. 8°.

Ghamat, K. E. The Present State of India. An appeal to Anglo-Indians. *Bambay*, 1905. 8°.

Presd. by the Author.

Giridharajee Mahārāj, *Goswāmī Srī.* Suddhādvaitamārtanda ...With a commentary called Prakāsa. By Srí Rama Krishna Bhatta. And Prameyaratnarnava. By Srí Balakrishna Bhatta. Edited by Ratna Gopal Bhatta. *Benares*, 1905. 8°.

Chowkhamba Sanskrit Series, No. 97.

Gonnaud, Pierre. La Colonisation hollandaise à Java, ses antécédents, ses caractères distinctifs. *Paris*, 1905. 8°.

Herzog, Maximilian. Further observations on Fibrin Thrombosis in the glomerular and other renal vessels in Bubonic Plague. *Manila*, 1905. 8°.

Bureau of Govt. Laboratories, Manila, No. 33.

Presd. by the Bureau.

Hill, S. C. Bengal in 1756-1757. A Selection of public and private papers dealing with the affairs of the British in Bengal during the reign of Siraj-uddaula. Edited...by S. C. Hill. 3 vols. *London*, 1905. 8°.

Part of the Indian Records Series.

Presd. by the Govt. of India, Home Dept.

Historical view of plans for the Government of British India, and regulations of trade to the East Indies and outlines of a plan of Foreign Government, of commercial economy, and of domestic administration, for the Asiatic interests of Great Britain. [By J. Bruce.] *London*, 1793. 4°.

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1. *Romaka, or the City of Rome, as mentioned in the Ancient Pali and Sanskrit works.*—*By* Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa, M.A.

The intercourse between Rome and India, from the 1st century B.C. to the 5th century A.D., has been a favourite subject of investigation to several scholars of eminence during the last few years. Mr. Robert Sewell,[1] on an examination of a large number of "Roman coins found in India," has concluded that the trade between Rome and India began in the reign of Augustus about 29 B.C., and remained in full force up to the time of Nero, A.D. 68. Then it slightly declined, but revived under the Byzantine emperors, and did not finally disappear until the Goths and Vandals attacked Rome about A.D. 450.

There seems to have been very little trade between Rome and India in the years preceding the reign of Augustus. Although several Roman coins of the Consulate period have been discovered in the Manikyāla stūpas and in the Hazāra district of the Punjab, but these old coins were very probably brought to India by traders several years after they had been prepared in Rome, for it is almost certain that Rome did not attempt to spread eastwards till the later years of the Consulate. It was in the reign of Augustus that the conquest of Asia by Rome began. The Imperial supremacy of Rome aroused on the part of her wealthy citizens an unrestrained indulgence in eastern luxuries, such as in perfumes, ivory, precious stones, silks, fine muslins, pepper, spices, etc.

These were largely supplied by the western and south-western parts of India, the chief centre of trade having been Barygaza or Bharoach, near Guzerat. About A.D. 47 the regularity of monsoons in the Indian Ocean was discovered, and the Roman ships began to sail direct to the Malabar coast, and thereby a great impetus was given to Indian commerce. Numerous coins of the time of Augustus and his successors were brought to India from Rome by traders. These coins have been recovered from various places, especially from the western districts of the Deccan. In the districts of Madura and Coimbatore alone, 55 separate discoveries have been made, and 612 gold coins and 1,187 silver coins, besides heaps consisting of five cooly-loads of gold coins and several thousands of silver coins, have been found out. Even in Bengal, at a place called Bāmanaghāti in the district of Singbhum, there have been found coins of the times of Gordian and Constantine. Near Jelālabād there have been found Roman coins of as late a period as the time of Theodosius about A.D. 450. It was about this time that the Goths and Vandals attacked Rome, whose trade with India consequently ceased altogether.

From the numismatic evidences given above, as well as from

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[1] Robert Sewell's article on "Roman Coins found in India," published in the Journal of the Royal Asiatic Society of Great Britain and Ireland, October 1904.

the artistic and other evidences, and also from the writings of Strabo, Pliny and others, it is clear that there were intimate relations between Rome and India for nearly five hundred years, *i.e.*, between 29 B.C. and A.D. 450. The art, religion, mythology, philosophy, science, etc., of India during this period were more or less influenced by the culture of Rome.[1] The elements in the art of the Gandhara or Peshwar School have been examined in detail, and the general aspect of the figure sculptures and architectural decorations of that school has been perceived to be distinctly Roman. The designs of the sculptures at Amarāvatī in Southern India have also been considered of Roman origin. It has even been affirmed that the Kusāna copper coins and the Indian coins of the Gupta period were direct imitations of the Roman coins called Aurei. The Roman word *denarius* in its Sanskrit form *dīnāra*, signifying a coin, occurs not only in the Indian inscriptions of the early Gupta kings, but also in such classical Sanskrit works as the Rājataraṅgiṇi of Kalhaṇa and Daśa-Kumāra-Carita of Daṇḍí, and even in the earliest known Sanskrit lexicon called Amarakoṣa,[2] compiled by Amarasiṇha, who was one of the nine gems of the court of Vikramāditya at Ujjainī.

Evidences might be multiplied to illustrate the manifold influence exercised by Rome on the ancient civilization of India. Seeing that the Roman influence was once so keenly felt by India, it is no matter of surprise that the name Rome should have been known to the Hindus in the ancient days. In fact, it occurs in several of the very important Sanskrit and Pāli works. The name by which Rome has been designated in ancient Sanskrit and Pāli works is *Romaka*, which is identical with *Roma* or *Rome*, the suffix *ka* having been euphoniously added to it. The latest authoritative mention of Romaka is to be found in the Siddhānta-śiromoṇi of the great Hindu astronomer Bhāskarācāryya,[3] who

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[1] Vincent A. Smith's article on "Graeco-Roman Influence on the Civilization of India," in the Journal of the Asiatic Society of Bengal, Part I., No. 3, 1889.

[2] दीनारेऽपि च निष्कोऽस्त्री । (Amarakoṣa, Nānārthavarga.)

[3] लङ्का-कु-मध्ये यमकोटिरस्याः
प्राक् पश्चिमे रोमकपत्तनं च ।
अधस्ततः सिद्धपुरं सुमेरुः
सौम्येऽथ याम्ये वड़वानलश्च ॥ १७ ॥
लङ्कापुरेऽर्कस्य यदोदयः स्यात्
तदा दिनार्द्धं यमकोटिपुर्य्याम् ।
अधस्तदा सिद्धपुरेऽस्तकालः
स्याद् रोमके रात्रिदलं तदैव । ४४ ॥

(Siddhānta-Siromaṇi, Golādhyāya, pp. 253, 259, edited by Bāpudeva Śāstrī, Benares, 1866.)

flourished in Southern India early in the 12th century A.D. Another celebrated astronomer named Varāhamihira, who was a brilliant gem in the court of Vikramāditya at Ujjainī in A.D. 505, and whose works are specially valuable as they contain a very large number of Greek and Latin astronomical terms, mentions Romaka in his well-known works [1] on astronomy and astrology named respectively Pañca-siddhāntikā and Vṛhat-saṃhitā. Romaka is also mentioned in the five famous astronomical works [2] named Paitāmaha, Vaśiṣṭha, Sūryya, Pauliśa and Romaka siddāntas, all of which have been reviewed by Varāhamihira in his Pañca-siddāntikā, and some of which were compiled in the 3rd or 2nd century A.D. Brahma-(sphuṭa)-siddhānta, Kāśyapa-saṃhitā, etc., also refer to Romaka. Thus examining the astronomical works we can trace the name Romaka as far back as the 2nd century A.D.

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[1] उदयो यो लङ्कायां
सोऽस्तमयः सवितुरेव सिद्धपुरे ।
मध्याह्नो यमकोट्यां
रोमकविषयेऽर्द्धरात्रः सः ॥ २३ ॥

(Pañcasiddāntikā, p. 45, edited by Dr. Thibaut and Sudhākara Dvivedī.)

[2] हृतश्चान्द्रदिनैरामत्स्ययाहो नो दिवागणः ।
लङ्कायां यमकोट्यां च सिद्धपुर्य्यां च रोमके ॥ २५ ॥
अर्द्धरात्रोदयौ तद्वद्दिनार्द्धास्तमयौ तथा ।
अभीष्टघटिकायुक्तो द्युगणोऽभीप्सितो भवेत् ॥ २६ ॥ p. 5.
कटाहद्वयसन्धातुः पूर्व्वादिषु निरक्षजाः
यमकोटिपुरीलङ्का रोमकाः सिद्धिदाः क्रमात् ॥ ४ ॥ p. 11.

(Vaśiṣṭha-siddhānta, edited by Vindhyesvari Prasada Dube, Benares.)

भूवृत्तपादे पूर्व्वस्यां यमकोटीति विश्रुता ।
भद्राश्ववर्षे नगरी स्वर्णप्राकारतोरणा ॥ ३८ ॥
याम्यायां भारते वर्षे लङ्का तद्वन्महापुरी ।
पश्चिमे केतुमालाख्ये रोमकाख्या प्रकीर्त्तिता ॥ ३९ ॥
उदक् सिद्धपुरी नाम कुरुवर्षे प्रकीर्त्तिता ॥
तस्यां सिद्धा महात्मानो निवसन्ति गतव्यथाः ॥ ४० ॥

(Sūryya-siddhānta, Bhūgolādhyāya, pp. 285-86, edited by Hari Sankar, Benares).

युगमन्वन्तरकल्पाः कालपरिच्छेदकाः स्मृतावुक्ताः ।
यस्मान्न रोमके ते स्मृतिवाह्यो रोमकस्तस्मात् ॥ १२ ॥

(Brahma-siddhānta, Chapter I.)

Not only in the astronomical works, but also in such other works as the great Sanskrit epic Mahābhārata and the Jātaka section of the Pāli Piṭakas we meet with a prominent mention of Romaka. It is not exactly known when the Mahābhārata and the Jātaka were respectively compiled. The orthodox Hindus look upon the Mahābhārata as a very ancient work, though some scholars have brought down the date of composition of some portions of it to the 1st century A.D. when Romaka or Romans were well known in India. The Pāli Jātaka is stated to have existed at the time of Aśoka, and the Piṭakas of which it forms a part are said to have been rehearsed in the 1st Buddhist Council in India in 543 B.C. According to this statement, it would appear that Romaka or Rome was known in India in the 6th century B.C. But this conclusion would appear to some as improbable as there is no other strong evidence to show that Rome was known to the people of India at so early a date. So we may suppose that the Romaka Jātaka in which the name Romaka occurs might have been compiled at a considerably late date. In the Mahāvaṃsa, Chapter XXXIII., we find that the Pāli Piṭakas which had been learnt by Prince Mahinda, son of Emperor Asoka, for three years, were carried to Ceylon where they were orally perpetuated by priests, and were not reduced to writing until in the reign of Vaṭṭagāmanī about 88 B.C. It is probable that the Romaka Jātaka was interpolated in the Pāli Piṭakas in Ceylon nearly one hundred years after the the time of Vaṭṭagāmanī, *i.e.*, in the 1st century A.D. This supposition would be supported by the account of Pliny, according to whom the communication of Rome with Ceylon (Taprobane) began in the reign of Emperor Claudius about A.D. 41. Hence we can fairly presume that the name Romaka was introduced in the Pāli Piṭakas and the Sanskrit Mahābhārata in the 1st century A.D., though it is not altogether improbable that the name had been introduced even much earlier.

I shall now briefly refer to the connection in which the name Romaka occurs in the Sanskrit and Pāli works mentioned above. In the Pāli Piṭaka, Romaka is mentioned, as I have already said, in the Romaka Jātaka [1] which describes a sham ascetic who, while living in a hut near a frontier village, was taken with the flavour of pigeon's flesh, and tried, contrary to the practice of the Buddhist ascetic whose place he occupied, to kill a certain pigeon for the purpose of eating it. This story was evidently intended to indicate the contrast of a Buddhist ascetic from a Roman ascetic, inasmuch as the former would under no circumstances kill any living creature.

The Mahābhārata [2] mentions the Romaka or Romans in

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[1] Romaka Jātaka, Jātaka Volume II., No. 277, edited by V. Fausboll.

[2] द्यूतां स्वरत्तान् जकाटात्तान् नानादिगम्भ्यः समागतान् ।
यौष्णीकानन्तवासांश्च रोमकान् पुरुषादकान् ॥ १६ ॥

connection with the Rājasūya Yajña or coronation ceremony of Mahārāja Yudhiṣṭhira at Indraprastha or Delhi. The Romans are described there as having come with precious presents to offer to Yudhiṣṭhira, and as waiting at the gate of his palace before getting admittance into the same.

I have already stated that Vṛhatsaṃhitā is a very learned work on astrology, compiled by the distinguished astronomer Varāhamihira about A.D. 505. In the 16th chapter of the work[1] the eminent author divides the people of India and outside into various well-defined groups to each of which he assigns the influence of particular planets and stars. In ascertaining the absolute or relative strength of a certain nation at a certain time, one has simply to examine the strength of the planet or star presiding over that nation at that time. It is very curious that according to Varāhamihira the Romaka or Romans stand under the influence of *Candra* or moon while the Cīna or Chinese live under the influence of *Bhāskara* or the sun, and the Sveta-Hūṇa or the White Huns, Avagāṇa (probably the Afghans) and the Maru-Cīna or the desert-living Chinese, *i.e.*, the Mongolians, imbibe the influence of *Ketu* or Dragon's Tail, and so on.

The Romaka-siddhānta[2] already referred to is a Sanskrit work on astronomy based probably on the Roman original of the astronomer Hipparchus. This work is said to have been dated the second century A.D., as it has been reviewed in most other Indian astronomical works, and is stated by Varāhamihira to have been explained by Lāṭa Deva [perhaps of Gujrata]. In the Brahma-siddhānta and other works there is a controversy[3] as to whether the authority of Romaka-siddhānta is to be accepted by Hindus. Some declare it to have stood outside the realm of Smṛtis or the Hindu Socio-religious institutes, while others establish its authority on the ground that it came forth, like all

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एकपादांश्च तत्राहमपश्यं द्वारि वारितान् ।
राजानो वलिमादाय नानावर्णाननेकशः ॥ १७ ॥

(Mahābhārata, Sabhāparva, Chapter 51).

[1] गिरिसलिलदुर्गकोपूलभरुकच्छसमुद्ररोमकतुखाराः ।
वनवासितङ्गणहलस्त्रीराज्यमहार्णवद्वीपाः ॥ ६ ॥

(Vṛhatsaṃhitā, Chapter XVI., edited by Dr. Kern, Calcutta, 1865.)

[2] *Vide* Shankara Balkrishna Dikshit's article on Romaka-siddhānta in the "Indian Antiquary," May 1890.

[3] Brahma-siddhānta, chapter I, verse 13. Compare also—

रोमकं रोमकायोक्तं मया यवनजातिषु ।
जातेन ब्रह्मणः प्राप्तात्तथा दुर्यवनस्य च ॥
रोमके नगरे तच्च रोमकेण च विस्तृतम् ।

(Pañcasiddhāntikā, Sudhākara's note, p. 2.)

other Hindu astronomical works, from the mouth of Sun-god himself, while that deity under the curse of Brahmā was born in the race of Yavana in the country of Romaka and told it to a Romaka or Roman by whose agency it was spread abroad. The anecdote here related points to the Roman origin of the Romaka siddhānta.

In the Vaśiṣṭha-siddhānta, Sūryya-Siddhānta, and other astronomical works already referred to, Romaka is mentioned as a *Mahāpurī*, *Pattana* or *Viṣaya*, *i.e.*, a great city, state or dominion. Romaka is stated there to be the westernmost point of the horizon, while Siddhapura, Yamakoṭi and Laṅkā (Ceylon) are respectively the northern, eastern and southernmost points. By way of further explanation, it is affirmed that while there is sunrise at Laṅkā or Ceylon, there is midday at Yamakoṭi, sunset at Siddhapura, and midnight at Romaka or Rome; or in other words, Rome is supposed to be 90 degrees west of the meridian of Ceylon. But as a matter of fact Rome is only 69½ degrees west of Ceylon. How are we then to justify the statement of ancient Indian astronomers with regard to the actual distance of Rome from Ceylon? I explain the statement by supposing that Laṅkā signifies not only Ceylon but includes islands situated 8 or 10 degrees east of its meridian, while Romaka includes the Roman dependencies situated 10 or 12 degrees west of its own meridian. Albirunī,[1] who flourished at the close of the 10th century A.D., in his "India" notices the Hindu astronomical works, including the Romaka-siddhānta, and supports the statement of Hindu astronomers by supposing that Romaka stands for the Roman Empire as far west as the northern part of Africa [extending perhaps to Morocco]. On either of the explanations given above Romaka or the westernmost part of the Roman Empire would be exactly 90 degrees west of the meridian of Laṅkā or the eastern part of the Ceylonese islands.

Some may say that Romaka of ancient Sanskrit and Pāli works does not signify Rome of Italy but denotes Rūma, that is, Byzantia or Constantinople. But this theory would be utterly groundless, for Constantinople is only 52 degrees west of the meridian of Ceylon, and under no circumstances can there be sunrise at Ceylon while there is midnight at Constantinople.

That Romaka is not Constantinople can be easily proved from a statement of Varāhamihira[2] who says, that while there is

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[1] Albiruni's India, p. 303, Volume I., edited by E. C. Sachau.

[2] द्युगणाद्दिनवाराप्ति र्द्युगणोऽपि हि देशकालसंबन्धात् ।
लाटाचार्य्येणोक्तो यवनपुरेऽर्द्धास्तगे सूर्य्ये ॥ १८ ॥
रव्युदये लङ्कायां सिंहचार्य्येण दिनगणोऽभिहितः ।
यवनानां निशि दशभिर्गतै र्मुहूर्त्तैस्तु तद्गुरुणा ॥ १९ ॥

(Dr. Thibaut's edition of Pañcasiddhāntikā, p. 45.)

sunrise at Laṅkā there is midnight at Romaka, and 2 o'clock after midnight at Yavanapura or Alexandria; or, in other words, Yavanapura or Alexandria is 60 degrees west of the meridian of Laṅkā and 30 degrees east of the meridian of Romaka. We know that Alexandria and Constantinople are situated almost on the same longitude. So the statement of Varāhamihira would be utterly incorrect if we suppose Romaka to be Constantinople, but it would be fairly correct if Romaka is identified with Rome.

Further, the name Rūma as signifying Byzantia or Constantinople, did not come into existence before the occupation of the place by the Roman emperor Constantine in the 4th century A.D., while we have seen that the name Romaka was used in Pāli and Sanskrit works at least as early as in the 1st century A.D. In fact, the name Rūma as signifying Byzantia or Constantinople was made known in India by the Arabic writers in and after the 7th century A.D.

The Sanskrit Jyotirvidābharaṇa[1] which mentions Rūma is a very modern work which did not exist before the time of Timurlane. This Rūma, as signifying Constantinople, is to be clearly distinguished from Romaka as signifying Rome. Dr. Kern[2] who did not distinguish between Rūma and Romaka observes that the name Rūma mentioned in Jyotirvidābharṇa stands for the more regular Sanskrit name Romaka. But this observation is, in my humble opinion, an oversight on the part of that eminent scholar. Indeed, there is not the slightest doubt that Romaka stands for Rome of Italy, for Varāhamihira distinctly mentions *Bhraukaccha* and *Samudra* along with *Romaka*[3] as if to indicate that the Romaka or Roman used to come to India over the *Samudra* or sea, and landed at the port of *Barukaccha* or Bharoach, near Guzrat. The route incidentally indicated here in the Vṛhatsaṃhitā of Varāhamihira exactly coincides with that by which the Roman traders actually used to come to India, as is evident from the writings of Pliny and others.

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[1] यो रूमदेशाधिपतिं शकेश्वरं
जित्वा गृहीत्वोज्जयिनीं महाहवे ।
आनीय संभ्राम्य मु तं त्वहो
श्रीविक्रमार्कः समसह्यविक्रमः ॥ (Jyotirvidābharaṇa).

[2] *Vide* Dr. Kern's edition Vṛhatsaṃhitā, Preface, p. 13.

[3] Vṛhatsaṃhitā, chapter XVI., verse 6.

2. *Two New Cyprinoid Fishes from the Helmand Basin.*—By C. Tate Regan, B.A. *Communicated by* Lieut.-Colonel A. W. Alcock, C.I.E., F.R.S.

[The Fishes collected in the affluents of the Helmand by Colonel Sir A. H. McMahon, K.C.I.E, C.S.I., and the officers of the Seistan Arbitration Commission, have, by the kindness of Messrs. G. A. Boulenger, F.R.S., and C. Tate Regan, of the British Museum, been identified as follows:—

Discognathus variabilis, Heckel; *Scaphiodon macmahoni*, n. sp.; *Schizopygopsis stoliczkæ*, Stdr.; *Nemachilus stenurus*, Herz.; and *Nemachilus rhadinæus*, n. sp.—A. W. A.].

Scaphiodon macmahoni, sp. nov.

Depth of body $3\frac{3}{5}$ to $3\frac{4}{5}$ in the length, length of head $4\frac{1}{5}$ to $4\frac{2}{5}$. Snout obtuse, shorter than the postorbital part of head. Diameter of eye 4 to $4\frac{1}{2}$ in the length of head, interorbital width $2\frac{3}{5}$ to $2\frac{2}{3}$. Mouth inferior; lower jaw with nearly straight transverse anterior edge; barbel originating directly below the nostrils, shorter than the eye. Scales 37–$39\frac{7}{8}$, 4 between lateral line and root of ventral fin, 16 or 18 round the caudal peduncle; the two rows above the lateral line the largest; scales of the lower part of the abdomen small or rudimentary. Dorsal III 10, its origin equidistant from tip of snout and base of caudal; third simple ray moderately strong, serrated in its basal half, $\frac{2}{3}$ to $\frac{3}{4}$ the length of head and $1\frac{1}{4}$ as long as the last branched ray; free edge of the fin straight. Anal III 6–7, the second branched ray a little longer than the first or the third and twice as long as the last, as long as or a little longer than the longest dorsal ray. Pectoral a little shorter than the head, extending $\frac{2}{3}$ or $\frac{5}{7}$ of the distance from its base to the base of ventral. Ventrals originating below the first branched ray of the dorsal, extending nearly to the origin of anal. Caudal forked. Caudal peduncle $1\frac{1}{2}$ to $1\frac{3}{4}$ as long as deep, its least depth not more than $\frac{1}{2}$ the length of head. Grayish above, silvery below; fins pale or somewhat dusky.

Two specimens, 70 and 110 mm. in total length. The larger with tubercles on the snout and on the rays of the anal fin.

Cyprinion kirmanense Nikolski, 1899, appears to be allied to this species, but differs at least in the larger eye, the thick and strongly serrated last simple dorsal ray, the form of the dorsal fin and the coloration.

Nemachilus rhadinæus, sp. nov.

Depth of body 7 to 10 in the length, length of head 5 to $5\frac{1}{2}$. Depth of head $\frac{3}{4}$ to $\frac{4}{5}$ its breadth, which is $1\frac{3}{5}$ to $1\frac{2}{3}$ in its length. Diameter of eye $7\frac{1}{2}$-$8\frac{1}{2}$ in the length of head and $1\frac{1}{2}$ to 2 in the interorbital width. Snout longer than postorbital part of head. Cleft of mouth extending to below the nostrils; lips moderately

thick, smooth, the lower interrupted medianly ; six barbels ; outer rostral barbel as long as the maxillary barbel, extending to or beyond the nostrils. Scales entirely wanting. Dorsal III 7, its origin nearer to tip of snout than to base of caudal ; free edge of the fin convex. Anal II–III 5. Pectoral extending about $\frac{1}{2}$ of the distance from its base to the base of ventral. Ventrals 8-rayed, originating below the anterior branched rays of the dorsal, extending $\frac{1}{2}$–$\frac{3}{5}$ of the distance from their base to the origin of anal. Caudal slightly emarginate. Caudal peduncle 2 to $2\frac{3}{4}$ as long as deep, its length 5 to $5\frac{1}{3}$ in the length of the fish. Large oblong or rounded dark spots on the back and sides ; dorsal and caudal with some small dark spots ; lower fins pale, immaculate.

Three specimens, 165 to 260 mm. in total length.

Perhaps allied to *Nemachilus sargadensis* Nikolski, 1899, the description of which is somewhat deficient in structural details, but the coloration appears to be too different to justify identification.

3. *The Origin of Mankind* (*according to the Lamaic Mythology*).—

By Rai SARAT CHANDRA DAS, *Bahadur*, C.I.E.

In the beginning of the present *Kalpa* [1] when all living beings, with the exception of man, had sprung up in the regions of the Rirab (*Sumeru*) mountain, situated above the residence of the four *Dika Pāla* (guardians of the world called *Mahārāja Kāyikā* [2]), two Deva-putra (angels) came down to this earth from heaven, on account of their merits having diminished and miraculously [3] became transformed into a shape which was the prototype of humanity. One of them was *Ñima* [4] Rab-nang (refulgent sun), and the other was *Dawa* [5] Di-meh (stainless moon). These were followed by other angels whose term of residence in heaven had expired at the exhaustion of the merit they had acquired before. [It should be remembered that the paradise, where gods live, is a place of harmless enjoyments. There neither virtue nor vice is acquired. A god only enjoys the fruit of his good *karma*. When the moral merit that is to his credit becomes exhausted he cannot recoup it by fresh acts as long as he remains in heaven. He then returns to this world where there are opportunities to do both good and bad works.] In heaven there is no opportunity to acquire moral merit. Thus humanity, evolving from heavenly origin in course of time, multiplied on earth. These transformed and fallen divinities lived to immeasurably long age, and are said to have been of a very tall stature, something like thirty-two cubits in height. In that early age they subsisted on contemplation's food.[6] Then there was no sun nor moon, nor day nor night; they moved in the light that emanated from their own bodies.[7] They could walk in space and perform all their works miraculously in the

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1 བསྐལ་པ། great period of time; age. 2 རྒྱལ་ཆེན་བཞི།

3 རྫས་དེ་སྐྱེས miraculous birth.

4 ཉི་མ་རབ་སྣང་ the luminosity of this angel resembled that of the sun. It is probable that this individual, after acquiring immense moral merit, returned to heaven and there became the sun.

5 ཟླ་བ་དྲི་མེད་ The light that came out of the body of this angel was mild and cool like that of the moon. He too, like *Ñima* Rabnang, eventually returned to heaven and became the moon.

6 དེ་ནི་ཚེ་བསམ་གཏན་གྱི་ཟས་ཀྱིས་འཚོ་ཞིང་། Pag-sam jonzañ, p. 10.

7 རང་འོད་རྟེན་འབྱུང་གྱི་འགྲོ་བ། Pag-sam jonzañ, p. 10.

manner of the gods of the *Dhyani-loka* [1] heaven. When with the further exhaustion of their moral merits their longevity decreased, there grew in their minds desire for tasting.

Sheebu [2] was the first of the human race who had tasted of the nectar. Those who came after him, being also grown by miraculous transformation, were called *Sheebu-kyeh*,[3] and began to subsist on that ambrosial drink. Accordingly, their stomachs being stuffed with food, they began to feel the necessity of evacuations, which brought on uneasiness in their minds. Their body being thus tainted by impurities, its resplendence—glorious colours—gradually began to fade. When the luminosity of their person was lost, they became very unhappy. At this stage, while deploring the loss and downfall from a happier state they had sustained, they thought intently on the necessity of external light, without which they were no longer able to work for their existence. By the force of this concentrated wish of all humanity, and also on account of there still existing to their credit some moral merits, there appeared in heaven the sun, moon, constellations, and other numberless luminous bodies. Then there arose the division of time, day and night. With the appearing of light, the distinction of colour, the sense of beauty and ugliness, the discrimination of good from bad complexion, also pride, envy, etc., arose. These demerits caused the food of nectar to vanish from this earth. In consequence of this fresh and greater misfortune, humanity now concentrated its desire for subsisting on something that was next in quality to the ambrosial food. By this combined will-power nature was forced to yield a condensed milky fluid which was formed on the surface of the earth when the gods had taken away the little nectar that had remained in the ocean by churning it. This was (སྙིའི་ཞུན) the earth-cream which contained nutrition similar but inferior to that which was in the food of the gods. Mankind enjoyed this delicious article for a great length of time. Increase of their demerit caused a corresponding decrease in the supply of earth-cream, in consequence of which mankind had to think of some other food to subsist upon. Vegetable shoots (སྐྱུ་གཅི་ཚལ) now sprang forth everywhere, and furnished an inexhaustible supply of food. They now sought variety, and accordingly, got the wildly grown (uncultivated) མ་རྨོས་པའི་འབྲས་ས་ལི *sa[l]i* rice, which grew in the morning and matured at noon, and became fit for harvesting in the evening. Such were the blessings which people in the *Krita yuga* (རྫོགས་ལྡན) *i.e*, the age of perfection. enjoyed. The duration of that age was 1,728,000 years.

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1 བསམ་གཏན་གྱི་ལྷ་དང་འདྲ། 2 ཤིན་པོ Manu. 3 ཤིན་པོ་སྐྱེས Mânava or born of Manu.

At the end of the *Krita yuga*, there grew in the human kind a tendency for eating animal food. Indulgence in this brought out the development of the distinction of sex Sexual attachment and union became necessary for the multiplication of the race.[1] Henceforward further addition by the miraculous transformation of fallen angels to humanity stopped. Out of the four fundamental vices, that of the sexual abuse, *i.e.*, adultery, for instance, prevailed in this age. Modesty and shame now came into prominence in the human conduct, which created the necessity of residence in houses. People learnt the art of house-building. Birth from the womb became the necessary result of procreation. On account of the freedom from the three principal root-vices which this age enjoyed, it came to be known by the name *Treta yuga* or *Sumdan*.[2] Its duration was 1,296,000 years. At the approach of a more degenerate age, humanity having erewhile not much to do for earning food, gradually turned idle. Lazy people, at each time, reaped more corn than was necessary for the day's consumption, and stored it up for use during the time they intended not to do any reaping work. In some houses there were provisions stored up for four or five days' use; in others, food for even seven days was kept. This storing up of corn produced the necessity for its protection by husk.[3] At this stage, nature refused to supply a ready harvest for the subsistence of idle humanity. It now became necessary for people to betake themselves to the labours of the field for growing corn. When one party prepared a field for cultivation another party came and forestalled them in sowing corn which they had kept in store. When the time for harvesting came, a third party, who had neither tilled the soil nor sown grain, came and reaped the corn. There grew much confusion in the division of the produce which all the three parties claimed as their own. This brought in the

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1 དེའི་མཐར་ཁམས་ཟས་རགས་པའི་སྐྱེགས་འདོད་བྱེད་པོ་མོ་འི་དབང་པོ་དོད་དེ་ཆགས་པ་སྐྱེས་པས་རྟ་བ་བཞི་ལས་ལོག་གཅིག་ཙམ་བྱུང་ཞིང་ཁྱིམ་བརྩིགས་པ་དང་མངལ་སྐྱེས་ཡང་བྱུང་པའི་སྐབས་སུ་གསུམ་ལྡན་ནོ། Pag-sam jonzaṅ, p. 10.

2 གསུམ་ལྡན།

3 དཔྱས་ལེ་ལོ་ཅན་འགའ་ཞིག་གིས་ལོ་དོག་བརྟན་དེ་ཞག་གཅིག་དང་ལྔ་དང་བདུན་སོགས་ལ་གསོག་འཇོག་བྱས་པས་རྒྱབ་མ་སོགས་ཀྱིས་བསྐྱངས་ཤིང།

question of right and possession. Honest men endeavoured to keep to themselves the fruit of their toil; idle and dishonest folks tried to subsist on the labours of others. This again raised the question of might and protection of property. It was now found that the age of commonwealth had passed away, and people now required a king to keep peace and to make property secure They, therefore, agreed to choose a king from among themselves whom they all should respect and obey. Accordingly, they elected Mahā Sammata [1] as their first king, who was so named on account of his being selected by the common consent and also for having been respected by all. This was the origin of royalty. His descendants came to be known as the Royal race, or Gyal-ri.[2] As it was not expected of the monarch to earn his own food by personal labour, his time being required for the public weal, it was agreed by all to give him, out of gratitude, in return for his good service to the public, one-sixth share [3] of the produce of the field From this originated the payment of revenue to the state. It was, at about this stage of civilization, that one party removed another's property without leave or consent. Hence originated theft, one party stealing another's property and thereby living at ease at other people's cost. This was recognized by the king as the crime of theft, which caused worldly enjoinments to degenerate. As two of the four vices, *i.e.*, adultery and theft, now prevailed in this world, this age became known by the name Dwāpar, *i.e.*, after "two," or in Tibetan Ñi-dan,[4] the age in which two of the root-vices prevailed. Its duration was estimated at 8,640,000 years.

Thereafter began the present age, with the institution of farming lords [5] (in Europe, fuedal-lords). When peaceful measures failed to govern the people, the necessity of inflicting corporeal punishment, and death-sentence for heinous crimes, arose. The fear of punishment now brought lying and perjury into existence. The four fundamental vices, *viz.*, adultery, theft, murder, and lying, were now recognized as great crimes, in consequence of which this age was called *Kali yuga*, or the age of strife and feuds.[6] Its duration was 432,000 years.

Origin of the five great races of Jambudvīpa.[7]

The origin of the royal race has been described above. Such people as being averse to work and householder's life retired to

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1 མང་ཐག་བ་བསྐོས་དེ།

2 རྒྱལ་རིགས།

3 ཞིང་གི་དྲུག་ཆ་རེ་བྱིན་པས་རྒྱལ་པོའི་སྐལ་བོ།

ལེགས་སོའི་རྩོལ་བྱས

4 གཉིས་སྐྱེན།

5 ཞིང་དཔོན།

6 རྩོད་དུས།

7 This paper embodies the translations of a few paragraphs from Pag-sam jonzañ དཔག་བསམ་ལྗོན་བཟང pp. 16 and 17.

solitude for contemplation and for spiritual culture, were called *Ṛiṣi*.[1] Those who betook themselves to worldly life and resided in retired villages, and places remote from towns, for leading a pure life (*Brahma caryā*), and earned their living by reciting the *Vedas*,[2] were called the Brahmans.[3] Those who, without committing theft, *i.e.*, by trading honestly in other people's articles acquired wealth, were called the *Je-rig* [4] (gentleman-caste).

Those who earned their living by serving the three superior races, by the labours of the field, and also by doing some work of mischief to others, were called the (དམངས་རིགས) Maṅg-rig, *i.e.*, the common people. Such people who possessed little sense of modesty and shame, committed theft, murder, etc., and earned their subsistence chiefly by doing menial service and mean works, were called the *Sudra* or Dol-wairig.[5]

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1 དྲང་སྲོང།

2 རིག་བྱེད།

3 བྲམ་ཟེ།

4 རྗེ་རིགས or Vaicya.

5 གདོལ་བའི་རིགས།

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(*g*) To fill any office in the Society on being duly elected thereto.

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FEBRUARY, 1906.

The Annual Meeting of the Society was held on Wednesday, the 7th February, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L.,

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FEBRUARY, 1906.

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The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E., Vice-President, in the chair.

The following members were present:—

Dr. N. Annandale, Babu Muralidhar Banerjee, Babu Amritalal Bose, Major W. J. Buchanan, I.M.S., Babu Nobin Chand Baral, Babu Damodar Das Barman, Babu Monmohan Chakravarti, Mr. J. A. Chapman, Mr. B. L. Chaudhuri, Mr. J. A. Cunningham, Mr. J. N. Das-Gupta, Mr. Hari Nath De, Babu Mucksoodan Dass, Mr. F. Doxey, Rev. Father E. Francotte, S.J., Babu Amulya Charan Ghosh Vidyabhushana, Babu Hemendra Prasad Ghose, Mr. H. G. Graves, Mr. T. H. Holland, Mr. D. Hooper, Dr. W. C. Hossack, Mr. J. Macfarlane, Kumar Ramessur Maliah, Dr. M. M. Masoom, Major F. P. Maynard, I.M.S., Mr. W. H. Miles, Mohamad Hossain Khan, Babu Panchanan Mukhopadhyaya, Hon. Mr. J. D. Nimmo, Mr. W. Parsons, Lieut.-Col. D. C. Phillott, 23rd Cavalry, F.F., Major L. Rogers, I.M.S., Rai Ram Brahma Sanyal Bahadur, Pandit Yogesa Chandra Sastri-Samkhyaratna-Vedatirtha, Dr. C. Schulten, Mahamahopadhyaya Haraprasad Shastri, Babu Chandra Narain Singh, Dr. Amrita Lal Sircar, Pandit Promatha Nath Tarkabhushan, Mahamahopadhyaya Chandra Kanta Tarkalankara, Babu Nagendra Nath Vasu, Pandit Jogindra Nath Vidyabhushan, Mahamahopadhyaya Satis Chandra Vidyabhushan, **Mr. E. H. C. Walsh, Mr. E. R. Watson.**

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Mr. P. N. Singh, Mr. K. V. Smith, Rev. Fr. J. Vauckell, S.J., Mrs. A. W. Young.

The Secretary read a letter from His Honour Sir Andrew Fraser, President of the Society, expressing his great regret at being unable to be present at the Annual Meeting of the Society.

According to the Rules of the Society, the Chairman ordered the voting papers to be distributed for the election of Officers and Members of Council for 1906, and appointed Major L. Rogers and Mr. L. L. Fermor to be scrutineers.

The Chairman announced that the Elliott Prize for Scientific Research for the year 1905 would not be awarded as none of the essays received in competition were of sufficient merit to justify the award of the Prize.

The Chairman called upon the Secretary to read the Annual Report.

Annual Report for 1905.

The Council of the Society have the honour to submit the following Report on the state of the Society's affairs during the year ending 31st December, 1905.

Member List.

There has been a steady increase in the list of Ordinary Members.

During the year under review, 43 Ordinary Members were elected, 18 withdrew, 3 died, and 8 were removed from the list. *viz.*: 3 under Rule 38, as defaulters; 3 under Rule 40, being more than 3 years absent from India; and 2 under Rule 9, not having paid their entrance fees. The election of one member was cancelled at his own request. The total number of members at the close of 1905 was thus 357 against 343 in the preceding year. Of these 144 were Resident, 133 Non-Resident, 12 Foreign, 20 Life and 47 absent from India, and one Special Non-Subscribing Member, as will be seen from the following table, which also shows the fluctuations in the number of Ordinary Members during the past six years:—

Year.	Paying.				Non-Paying.				Total.
	Resident.	Non-Resident.	Foreign.	Total	Life	Absent.	Special Non-Subscribing.	Total.	
1900	116	124	18	258	22	30	1	53	311
1901	123	133	13	269	22	36	1	59	328
1902	126	126	14	266	21	46	1	68	334
1903	127	126	15	268	21	45	1	67	335
1904	132	130	14	276	21	45	1	67	343
1905	144	133	12	288	20	47	1	68	357

The three Ordinary Members, whose loss by death during the year we have to regret, were Mr. H. W. Peal, Dr. W. T. Blanford (Life Member) and Raja Jay Krishna Das, Bahadur.

Owing to the death of Dr. W. T. Blanford, Life Member and Honorary Member, the Council has recommended Lord Curzon to fill this vacancy.

The list of Special Honorary Centenary Members and Associate Members continued unaltered from last year, their numbers standing at 4 and 13 respectively.

No Members compounded for their subscription during the year.

By the operation of Nos. 5 and 7 of the Society's Rules, sometimes nearly two full months elapsed between the date of application of a candidate and the ballot for his election. To shorten this period, the Society has revised Rules 5 and 7, and at present a candidate is ballotted for within one week after the submission of his name to the Council.

Indian Museum.

Only one change has occurred amongst the Trustees, namely, that caused by the retirement of Sir J. A. Bourdillon, K.C.S.I., and the Hon. Mr. Justice Asutosh Mukhopadhyaya, D.L., was appointed to fill the vacant place. The other Trustees who represent the Society have been :—

The Hon. Sir Alexander Pedler, *Kt.*, F.R.S., C.I.E.
G. W. Küchler, Esq., M.A.
T. H. Holland, Esq., F.G.S., F.R.S.
J. Macfarlane, Esq.

Finance.

The Accounts of the Society are shown in the Appendix under the usual heads. In this year's account there is an additional statement under the head "Bardic Chronicle MSS." Statement No. 10 contains the Balance Sheet of the Society and of the different funds administered through it.

The credit balance of the Society at the close of the year was Rs. 1,93,143-1-9 against Rs. 1,92,939-7-5 in the preceding year.

The Budget for 1905 was estimated at the following figures :— Receipts Rs. 18,100, Expenditure Rs. 22,683 (ordinary Rs. 17,654, extraordinary Rs. 5,029). Taking into account only the ordinary items of receipts and expenditure for the year 1905, the actual results have been :—Receipts Rs. 20,689-2-11, Expenditure Rs. 15,521-14-1, showing a balance in favour of the Society on its ordinary working of Rs. 5,167-4-10. Against this balance there have been several extraordinary items of expenditure amounting to Rs. 6,452-12-6. The total expenditure of the year has, therefore, been a little more than the income. There is a Temporary Investment of Rs. 45,100 at the close of the year, out of which Rs. 31,946-3-10 is in favour of the Society (besides Rs. 9,132-9-10 due to the Society from the Oriental Publication Fund, Members, etc.), Rs. 3,274-9-9 Oriental Publication Fund (after a loan of Rs. 2,000 from the Society's fund to pay off bills), Rs. 3,120-2-5 Sanskrit MSS. Fund (less Rs. 1,000 advanced to the Joint Philological Secretary for the purchase of Sanskrit MSS.), Rs. 4,459 Arabic and Persian MSS. Fund (less Rs. 3,000 advanced to the Officer in charge of the Arabic and Persian Search for the purchase of Arabic and Persian MSS.), and Rs 2,400 Bardic Chronicle MSS. Fund. In addition to this, a sum of Rs. 1,200 has been added to the Reserve Fund from entrance fees received during the year.

The Ordinary expenditure was estimated at Rs. 17,654, but the amount paid out was only Rs. 15,521-14-1. On the expenditure side, the items of "Salaries," "Pension," "Commission," "Postage," "Freight," "Meetings," "Contingencies," "Books," "Binding," "Printing Circulars, etc.," all show a slight increase, excepting "Freight," "Books," "Binding," and "Printing Circulars, etc." Owing to several consignments of books received during the year, "Freight" shows an increase of Rs. 60-0-6. For the same reason, there is an increase of Rs 232-9-4 under "Books." This was expected, an extra grant of Rs. 1,000 having been sanctioned. The estimate for "Binding" has been exceeded by Rs. 507-10. This is due to binding a large number of books in the Society's library, for which an extra grant of Rs. 1,000 was also sanctioned. As certain acknowledgment forms had to be printed, and a larger number of circulars than usual was required, there is an increase of Rs. 86-11-9 under the head "Printing Circulars, etc." The actual expenditure on the *Journal* and *Proceedings* and *Memoirs* was Rs. 5,732-1-3 against a budget provision

of Rs. 7,300, but all the bills for the publications of the past year have not yet been paid.

There was only one extraordinary item of expenditure during 1905 under the head "Furniture" not provided for in the Budget. Rs. 183-8 was paid for a book-case for the Society's library, and Rs. 136-3-6 was spent for new shelves and chairs.

The expenditure on the Royal Society's Catalogue (including subscription sent to the Central Bureau) has been Rs 1,597-15. while the receipts under this head from subscription received on behalf of the Central Bureau (including the grant of Rs 1,000 from the Government of India) Rs. 1,481-5. A sum of Rs. 854-8 has been remitted to the Central Bureau, and Rs. 236 is still due to them.

Three Extraordinary items of expenditure were budgetted for. Out of the sum of Rs 1,000 for the Library Catalogue, only Rs. 177 has been spent on account of printing charges. Rs. 2,809 was budgetted for picture-frames but Rs. 3,313-2-6 has been spent, the excess being due for backing the pictures with oil-cloth and other expenses incurred Rs. 1,265 were spent on the building, while a sum of Rs. 1,220 was budgetted for. Rs. 1,220 were paid for white-washing and colour-washing part of the Society's premises, and Rs. 45 for repairing the roof.

The Budget estimate of Receipts and Disbursements for 1906 has been fixed as follows:—Receipts Rs. 18,700. Expenditure Rs 18,683. The items "Salaries," "Commission," "Pension," "Municipal Taxes," "Postage," and "Contingencies" have all been increased. "Salaries" have been increased by Rs. 200, owing to certain increments sanctioned to the office staff. "Commission," "Pension," and "Postage" are based upon the actuals of the last year. There is a heavy increase of Rs. 581 on account of Municipal Tax owing to a new assessment. "Contingencies" has been increased by Rs. 150. This is due to providing the menial servants with new clothing for the cold weather.

Ten extraordinary items of expenditure have been budgetted for during the year 1906, namely, Rs. 1,000 for the new Library Catalogue, Rs. 330 for book racks for storing periodicals, Rs. 100 for illuminating the Society's building on the night of the illumination during the visit of T.R H. The Prince and Princess of Wales, Rs, 1,000 for new books, Rs. 500 for binding, Rs. 2,300 for printing the *Journal* and *Proceedings* and *Memoirs* published during 1905, Rs. 1,800 for printing the Persian translation of Morier's Haji Baba, Rs. 500 the cost of a complete lantern for the Society's Meeting, Rs. 155 for renewing the lights and fans in the room let to the Automobile Association of Bengal, and Rs. 288 for picture rods. Besides these provisions, there will be a heavy expenditure on account of repairs and certain structural improvements in the Society's building, the total cost of which is not yet settled.

The Hon. Mr Justice Asutosh Mukhopadhyaya continued Treasurer throughout the year.

BUDGET ESTIMATE FOR 1906.

Receipts.

	1905. Estimate.	1905. Actuals.	1906. Estimate.
	Rs.	Rs.	Rs.
Subscriptions	7,800	8,503	8,000
Sale of Publications ...	600	1,322	800
Interest on Investments ...	6,000	6,892	6,200
Rent of Room	600	550	600
Government Allowances ...	3,000	3,000	3,000
Miscellaneous	100	422	100
Total ...	18,100	20,689	18,700

Expenditure.

	Rs.	Rs.	Rs.
Salaries	3,800	3,810	4,000
Commission	425	456	450
Pension	192	204	240
Stationery	120	67	120
Lights and Fans	320	228	320
Municipal Taxes	884	884	1,465
Postage	500	539	525
Freight	100	160	100
Meetings	100	123	100
Contingencies	500	529	650
Books	2,000	2,232	2,000
Binding	700	1,208	700
Journal, Part I	2,100	1,792	...
,, ,, II	2,100	1,549	...
,, ,, III	2,500	590	...
Proceedings	600	423	...
"Journal and Proceedings" and "Memoirs"	...	...	7,300
Printing Circulars, etc. ...	200	287	200
Auditor's Fee	100	100	100
Petty Repairs	100	27	100
Insurance	313	313	313
Total ...	17,654	15,521	18,683

Extraordinary Expenditure.

	1905. Estimate. Rs.	1905. Actuals. Rs.	1906. Estimate. Rs.
Library	1,000	177	1,000
Furniture	...	319	330
Illumination	...	...	100
Books	...	...	1.000
Binding	...	...	500
"Journal and Proceedings" and "Memoirs"	...	1,378	2,300
Printing Haji Baba	...	...	1800
Lantern	...	...	500
Renewal of wiring for Electric Lights and Fans for Automobile Association of Bengal	...	...	155
Picture Rods	...	...	288
Picture Frames	2,809	3,313	...
Building	1,220	1,265	...
Total ...	5,029	6,452	7,973

Agencies.

The number of the copies of the *Journal* and *Proceedings* and of the *Bibliotheca Indica* sent to Mr. Bernard Quaritch, the Society's London Agent, during the year 1905, for sale, were respectively 540 and 639, valued at £75 and Rs. 331-12, of which £49-9 and Rs. 105-14 worth have been sold for us.

Nine invoices of books purchased and of publications of various Societies sent in exchange were received during the year, the value of the books purchased amounting to £108-12-4.

The number of copies of the *Journal* and *Proceedings* and of the *Bibliotheca Indica* sent to Mr. Otto Harrassowitz, the Society's Continental Agent, during 1905, for sale, were 417 and 516, valued at £43-16 and Rs. 256-10. The sale proceeds have been £19-13 and Rs. 306-6, respectively.

Library.

The total number of volumes or parts of volumes added to the Library during the year was 2,559, of which 653 were purchased and 1,906 presented or received in exchange for the Society's publications.

The new edition of the Society's Library Catalogue is still in press, and a little over half the MS. has already been set up. The work of reading the proofs has been entrusted to Professor Hari Nath De under the supervision of the General Secretary.

There were several Meetings of the Library Committee during the year, and it was resolved to remove all the periodicals to the ground floor of the building and to bind all the books and

periodicals in the Society which required it. For this purpose nearly two-thirds of the Library has been examined, and 22 book racks have been purchased for the accommodation of the periodicals.

Owing to increase in the number of Sanskrit MSS., it has been found necessary to separate the Sanskrit MSS. from those in Arabic and Persian, and the west room has been set apart to accommodate the former.

At the suggestion of Sir Charles Lyall, the Hebrew MS. containing the translation of an early Italian work on the Koran in the Society's Library was presented to the British Museum.

In modification of the order regarding the proposed rejection of certain books from the Society's Library, the General Meeting resolved that the Library Committee be empowered to settle the prices of books with authority to offer Government publications to Government. Only two such publications have been accepted (by the Imperial Library), and other public bodies have written to say that the books offered for sale were not required by them. The books will now be stamped with a special stamp and put up to public auction.

The question of the procedure to be followed in lending out MSS., both in India and Europe, was referred to a Sub-Committee, which drew up the new rules published in the Proceedings for December 1905.

In continuation of the Council order, the Imperial Library has been allowed to borrow books and MSS. from the Society for the use of its readers, until 31st August 1906, subject to the new rules for lending out MSS. During the period from September 1904 to August 1905, forty-nine books and MSS. have been thus borrowed.

Babu Mahendra Nath Mukerjee resigned his appointment as the Pandit for the Oriental Library in October, and Babu Kunja Behari Nyayabhushana was appointed to fill the vacant post.

The Library was in charge of Mr. J. H. Elliott, the Assistant Secretary and Librarian of the Society.

International Catalogue of Scientific Literature.

During the year the volumes on Chemistry, Meteorology, Botany and Zoology of the second annual issue, and volumes on Mathematics, Mechanics, Physics, Astronomy, Physiology, and Bacteriology of the third annual issue were received and have been distributed to the subscribers.

On completion of the 2nd Annual Issue of the International Catalogue bills have been made and submitted to subscribers for payment of the amount of subscription. A sum of Rs. 854-8 has been remitted to the Central Bureau during the year, representing part of the subscription to 1st and 2nd Annual Issues.

The Director International Catalogue of Scientific Literature informed the Regional Bureau that a convention was to meet in London on 25th July, to consider the question of extending the issue of Scientific Catalogue beyond the first five annual issues, and asked this Bureau to appoint one or two delegates to represent

the Regional Bureau for India and Ceylon. Dr W. T. Blanford and Lt.-Col. D. Prain, upon the invitation of the Council, agreed to perform this duty. The death of Dr. Blanford, shortly before the date fixed for the Convention, left no time to appoint a delegate in his place, and, accordingly, Lt.-Col. D. Prain attended the Convention alone and voted with the majority in favour of the continuation of the publication of the International Catalogue to a further period of five years.

The Government of India was pleased to sanction a grant of Rs. 1,600 for the expenses of the Regional Bureau. During the year 786 Index slips were made, and after having been checked by the experts, were sent to the Central Bureau, London.

Elliott Prize for Scientific Research.

On the recommendation of the Director of Public Instruction, Bengal, a second medal was awarded to Babu Surendra Nath Maitra for his essay submitted in competition for the Elliott Prize for Scientific Research for 1904 under rule G; and Babu Sarasilal Sarkar was paid Rs. 150, being part of the award for his essays submitted in competition for the Elliott gold medal during the years 1897 and 1901.

Barclay Memorial Medal.

In connection with the Barclay Memorial Medal, the Council awarded the medal for 1905 to Lieut.-Col. D. D. Cunningham, F.R.S., in recognition of his biological researches.

Society's Premises and Property.

The proposed thorough repairs and structural improvements in the Society's buildings have not yet been completed, although Messrs. Mackintosh, Burn & Co. have substituted steel joists for all the wooden beams except in two rooms on the ground floor. Mr. E. Thornton has promised a complete scheme for the restoration of the building, and the work will be taken in hand during the present year.

All the pictures of the Society have been temporarily hung, and after the repairs to the Society's building are completed, they will be suspended on picture-rods, to be fitted up by Messrs. Leslie & Co. at a cost of Rs. 288 sanctioned by Council.

Exchange of Publications.

During 1905, the Council accepted seven applications for exchange of publications, *viz:* (1) from the Victoria University of Manchester, the Society's *Journal* and *Proceedings* and the *Memoirs* being exchanged for their publications; (2) from the Cambridge Antiquarian Society, the Society's *Journal* and *Proceedings* and the *Memoirs* being exchanged for the publications of that Society; (3) from the Bureau of Government

Laboratories, Manila, the Society's *Journal* and *Proceedings* and the scientific portion of the *Memoirs* for the publications of their Laboratory; (4) from Dr. F. Fedde, editor of the Botanischer Jahresbericht, the Society's *Journal* and *Proceedings* and the *Memoirs* containing biological articles only for his "Litteratur der Morphologie und Systematik der Phanerogamen"; (5) from the Colombo Museum, the Society's natural history publications being exchanged for their "Spolia Zeylanica"; (6) from the University of Michigan, the Society's *Journal* and *Proceedings* and the scientific portion of the *Memoirs* for the Report of the Michigan Academy of Science; (7) from the Ethnological Survey of the Philippine Islands, Manila, the Society's *Journal* and *Proceedings* and the anthropological and scientific portion of the *Memoirs* being exchanged for the publications of that Survey.

The exchange of publications with the Royal Statistical Society of London has been stopped.

The revision of the Society's list of Exchanges and the distribution of the *Memoirs* to Societies, etc., are under consideration. The following gentlemen have been appointed to report on them:—

J. Macfarlane, Esq.
T. H. Holland, Esq.
Dr. E. D. Ross.
Dr. N. Annandale.

Publications.

The question of extending and improving the Society's publications has occupied the attention of a special Sub-Committee, and, after due deliberation, the Council accepted their recommendations, namely:—

1. Publication of a quarto series styled *Memoirs*.
2. Publication of a new series (8vo.) containing the *Journal* and *Proceedings* combined.
3. Paper and type selected for the purpose to be used.
4. Insertion of advertisements relating to books and instruments.
5. Appointment of Messrs. Thacker, Spink & Co. to secure advertisements.
6. Publication of such resolutions of Council as the Council may determine in the Proceedings.

The arrangements for insertions of advertisements are not yet complete, and none have appeared.

There were published during the year fourteen numbers of the *Proceedings* and *Journal* (*Proceedings* Nos. 9–11 of 1904; *Journal* Part I, Extra No. 1904; *Journal* Part II, Supplement 1904, *Journal* Part III Extra No. 1904, and *Journal* and *Proceedings*, N.S., Vol. I, Nos. 1–8 of 1905) containing 500 pages and 9 plates.

Of the *Memoirs*, six numbers were published (Vol. I, Nos. 1–5 and 7) containing 118 pages and 7 plates.

The Numismatic Supplement Nos. 4 & 5 have been published in the *Journal* Part I, Extra No. of 1904, and *Journal* and *Proceedings*, N.S., Vol. I, No. 4 of 1905, under the editorship of Mr. Nelson Wright.

There were also published the Indexes to *Journal* Parts II and III for 1904 and a Persian translation of Morier's Adventures of Hājī Baba of Ispahan by Hājī Shaikh Aḥmed-i-Kirmānī, edited with very valuable notes bearing on idiomatic peculiarities of modern Persian by Major D. C. Phillott.

Owing to the increased number of members, it was found necessary to print 700 copies of each issue of the *Journal* and *Proceedings* and *Memoirs*, instead of 650.

To facilitate the publishing of papers, and to avoid the delay often caused by reference to Council, that body has appointed a Standing Publication Committee composed of the Editors of the *Journal* and *Proceedings*, giving them power to sanction the the printing of papers within the amount of the sanctioned grant, but not to reject any paper.

In order to secure a uniform and suitable system of transliteration for all the publications of the Society, the Council has invited Lieut.-Col. Phillott and Dr. Ross to draw up a revised scheme for the transliteration of Persian, Urdu and Arabic Alphabets. For the Devanagari alphabet and for all the alphabets relating to it, the system in force seemed to call for no alteration.

It is proposed to publish in the Society's *Memoirs* a series of photographic facsimiles of autographs and signatures of famous Eastern authors and monarchs at a cost of Rs. 250.

The *Proceedings* were edited by the General Secretary, Mr. J. Macfarlane. The Philological section of the *Journal* was edited by Dr. E. D. Ross, the Philological Secretary. The coin cabinet was in charge of Mr. H. N. Wright, the Numismatic Secretary, who also reported on all treasure trove coins sent to the Society. Mahamahopadhyaya Haraprasad Shastri was in charge of the *Bibliotheca Indica* and the work of collecting Sanskrit MSS. The Natural History section of the *Journal* was edited by Major L. Rogers, I.M.S., and the Anthropological section by Dr. N. Annandale, with the exception of two months when Mr. H. E. Stapleton officiated for him.

Philology, etc.

There were several papers of historical importance published in the *Journal*.

Mahāmahopādhyaya Haraprasād Shāstrī gave a brief *History of Nyāyasāstra from Japanese Sources*, the logical system of Akṣapāda which, though completely lost to India, is still studied and commented upon in China, Japan, Corea, and Mongolia. In Japan, says the writer, it has a rival in the European system, but this rivalry has only strengthened the position of that ancient school of logic.

Mahāmahopādhyaya Professor Satis Chandra Vidyabhusana, M.A., gives the story of the life of Sarvajña-mitra, a Tāntrika

Buddhist author of Kāśmīra, in the eighth century A.D. The same scholar described Laṇkāvātāra Sūtra, an ancient Buddhist Sanskrit work, which gives an account of an imaginary visit paid by Buddha to Rāvaṇa, the king of Laṇkā, and contains a copious explanation of the Buddhistic metaphysical doctrines. In another number he gave an account of Anuruddha Thera, a learned Pali author of Southern India, in the twelfth century A.D.

Babu Ganga Mohan Laskar, M.A., a research scholar, deciphered four new Copper-plate charters of the Somavaṃśī kings of Kośala and Kaṭaka, sent some time ago from the Pāṭna State in the Central Provinces to the Society. They form an addition to the six charters of these kings edited by Mr. Fleet in the Epigraphia Indica (Vol. III, pp. 323-359). Of these new land-grant charters, one belongs to Mahā-Bhavagupta I. and the rest to Mahā-Śivagupta. The language and characters of both the old and new charters are the same.

The identity of Halâyudha, the author of Brâhmanasarbasva and Prime Minister of Lakshmana Sena, son of Ballâla Sena of Bengal, was discussed by Pundit Yogeśa Chandra Śastree, who came to the conclusion that he was not the same personage as Halâyudha of the Chatta family who was honoured by Ballàla Sena, or Halâyudha, the ancestor of the Tagore family of Calcutta. Babu Monmohan Chakravarti, M.A., described and edited the poem Pavana-dūtaṁ, or Wind-Messenger, by Dhoyika, a court-poet of Lakṣmaṇasena of Bengal. The appendix on the Sena Kings of Bengal, which forms part of this paper, is a brief but useful contribution to the history of this Dynasty.

Mr. W. N. Edwards described some interesting archæological remains in Bishnath in the way of fortifications, temples, etc. There are, he tells us, several inscriptions there which have not yet been described. Babu Nagendra Nath Gupta wrote on the well-known Maithil poet Vidyāpati Ṭhākur, and Mr. Justice Sarada Charan Mitra contributed a note on Caṇḍeśvara Ṭhakkura, the author of a recognized work on the Mitākṣarā system of Hindu Law.

Only three contributions were made to Mohammedan history during the period under review. Mr. William Irvine continued his most valuable monograph on the Later Mughals (1707-1803) and treated the subject with that thoroughness which characterises all his contributions to the history of the Mahomedan period. Major W. Haig, I.A., wrote some notes on the Bahmani Dynasty; and Mr. H. Beveridge briefly told of some interesting facts relating to the Emperor Bābar which are not mentioned in Erskine and Abul Fazl.

Of papers of Linguistic interest there was one containing a collection of 100 Kolarian riddles current among the Mundaris in Chota Nagpur by the Rev. Paul Wagner, and another on the Similarity of the Tibetan to the Kashgar-Brahmi Alphabet by the Rev. A. H. Francke, which was published in Vol. I., No. 3 of the *Memoirs*.

No less than half a dozen valuable papers on Tibetan subjects were contributed by Rai Sarat Chandra Das, Bahadur, C.I.E.

All of these papers were at once important and interesting, and bore testimony to the knowledge and industry of the writer. The following were the more important ones:—(1) The Hierarchy of the Dalai Lama (1406-1745); (2) The Monasteries of Tibet; and (3) Tibet under the Tartar Emperors of China in the 13th Century A.D. Mahāmahopādhyaya Professor Satis Chandra Vidyābhūṣana, M.A., also wrote a useful paper on certain Tibetan Scrolls and Images lately brought from Gyantse during the recent British Expedition to Tibet, in Vol. I., No. I, of the *Memoirs*. A very important paper on Arabic Alchemy was published by Messrs. Stapleton and Azoo, which, though properly belonging to our scientific publication, has considerable philological importance.

Natural History, etc.

The activity of the Natural History Section of the Society has been well maintained during the past year, during which a number of important papers have been published, extending over a wide range of subjects. Among the Zoological contributions are four papers on Indian snakes and lizards by Dr. Annandale, describing the additions made to the collection of the Indian Museum for some years past, and including some new species, and on the lizards of the Andaman Islands. The same author also contributes some other papers including Studies of the Fauna of Indian tanks, about which very little is yet known, while the earwigs of the Indian Museum have been named by Mr. Burr. Botany is well represented by further work on the Flora of the Malayan Peninsula by Sir George King and Mr. Gamble, and by a paper on the yams by Colonel Prain and Mr. Burkill. Two papers on the chemistry of certain insects and plants have been contributed by Mr. Hill, while a notable one entitled "Sal Ammoniac*—a study in Primitive Chemistry," by Mr. Stapleton, has appeared as a *Memoir*; as has also one on the Chemistry of the Arabs by Messrs. Stapleton and Azoo. Among the Geological papers may be mentioned a valuable one on the chemical analysis of a clay found in Bundelkand by Mr Silberrad, while at the December meeting a most interesting and instructive lecture was delivered by Mr. Holland on the Kangra Valley earthquake, illustrated by a series of lantern slides. The great success of this meeting in attracting an unusually large attendance will encourage the Council to continue its recent efforts to make the meetings more interesting than they have been for some time past, by having purely technical papers taken as read, and, as far as possible, providing some subject of general interest for consideration of each meeting.

Anthropology, etc.

During the past year several short communications and one rather lengthy one (in continuation of a former paper) have been published in the *Journal* and *Proceedings*, while three anthropological

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* Also noticed under the heading Anthropology.

Memoirs have appeared and others are in the press. Of the published *Memoirs* one is of great general interest, illustrating the close relations between animism and the beginnings of physical science in the East, while the others are important contributions to local folklore and ethnology. It cannot be said, however, that the progress of the study of anthropology has been altogether satisfactory as regards the Society. Abundant material is received for publication; but no discussion is aroused at the meetings, and there seems to be a tendency to treat the different branches into which the study of man may be divided as devoid of scientific dignity, to ignore all that has previously been written on the subjects treated, and to forget external relationships. Every branch of biology—anthropology as much as any other—may be legitimately treated in one of three ways:—(1) the investigator may content himself with compiling and abstracting in a detailed manner all that has already been published on any one subject; (2) he may record facts previously unknown or ignored; or (3) he may aspire to the more ambitious task of treating his theme in a comparative manner, from the standpoint of a wide and deep study of allied and conflicting phenomena. In India the compiler (acknowledged as such) and the recorder can add very largely to the sum of human knowledge, but if they mingle things new and old indiscriminately, they run the risk of having their work ignored by serious students of anthropology. The Anthropological Secretary must appeal to contributors not to cast on him the sole burden of discovering, in every case, whether a communication contains sufficient original matter, or forms a sufficiently "thorough" account, to merit publication. The bulk of anthropological literature is already so great, and increases so rapidly, that unnecessary repetition of details can only complicate the student's task. If anthropology is a science, it merits some preliminary study.

A scheme is in hand for the publication in the *Memoirs* of figures and descriptions of interesting Asiatic implements, weapons, and the like; but as nothing has yet been produced, details must be postponed until next year.

Coins.

Thirteen gold, one hundred and forty-six silver and one copper coins have been presented to the Society during the year 1905. The coins are of the following periods:—

Mediæval India	...	Sassanian types Æ	...	5
		Gadhaiya coins Æ	...	3
Independent Bengal	...	Shamshuddin Iliyas Æ	...	2
		Husen Shah Æ	...	5
Mughal	...	Akbar *N* 2, Æ 1, Æ 1	...	4
		Jahāngir Æ	...	2
		Shāhjahān „	...	2
		Carried over	...	23

		Brought forward	...	23
Mughal—*contd.*		Aurangzeb	*Æ* ...	1
		Farrukhsir	,, ...	1
		Muhammad Shāh	,, ...	23
		Ahmad Shāh	,, ...	24
		Alamgir II.	,, ...	25
		Shāh Alam II.	,, ...	20
Assam ...	...	Rudra Singh	,, ...	2
		Shiva Singh and Pramatheswari Begam	*Æ* ...	
		Shiva Singh and Phuleswari Begam	,, ...	1
		Pramātha Singh	,, ...	5
		Rājeswara Singh	,, ...	5
		Lakshmi Singh	,, ...	6
		Gauri Nāth Singh	,, ...	10
French Compagnie des Indes	...	...	,, ...	1
South India ...		Vijayanagar	*Æ* ...	5
European ...		Venetian ducats	,, ...	2
Ottoman Sultāns ...		... ...	,, ...	4
				158

Of these twelve (nine gold and three silver) were presented by the Bombay Government, and one (a copper coin) by the United Provinces Government.

During the year the Honorary Numismatist examined and reported on 8,548 coins forwarded as treasure trove from various districts in Bengal, Assam, the Central Provinces, and the Punjāb.

One find alone contained 4,500 copper coins, but of these only 218 were recommended for acquisition.

By order of the Government of India, the name of the Numismatic Collection attached to the Public Library at Shillong was added to the list of institutions among which coins are distributed under the Indian Treasure Trove Act.

Bibliotheca Indica.

The publication of the Bibliotheca Indica series was supervised by the Joint Philological Secretary. The regular income of the Oriental Publication Fund can bear the cost of publishing twenty-four fasciculi. In 1903, however, thirty-six fasciculi were issued, and in 1904 forty-two, whereby the accumulated balance became exhausted. In September 1905, it was found that the number of fasciculi due to appear would cost much more than the regular income of the fund, and it was necessary to prevent the publication of more than one fasciculus of each work in hand. In spite of this limitation, thirty-four fasciculi have been published in the year under review, and special measures had to be taken to meet the cost of their publication.

These thirty-four fasciculi were issued at a cost of Rs. 13,231, the average cost per fasciculus being Rs. 389.

By a resolution of the Council, dated 30th September 1898, the annual statement of Bibliotheca Indica publications is limited to those works which were either commenced or which came to a close during the year.

Among the works taken in hand during the course of the year may be mentioned Saḍdarśana-Samuccaya, by Haribhadra, a great Jain writer who died in A.D. 479. He wrote a short work on the six Systems of Indian Philosophy, namely, Bauddha, Naiyāyika, Jaina, Saṃkhya, Vaiśeṣika and Mīmāṃsaka. Those who consider Nyāya and Vaiśeṣika to be one and the same system add Cārvāka to the list. The text was published some time ago in Italy. The present edition is accompanied by a commentary entitled Tarkarahasya, by Guṇaratna, who flourished in the fourteenth century. The Commentary though modern gives copious information about the schools, their works, their authors and their teachers. It furnishes ampler materials for a history of Hindu philosophy than any other single book. The editor is Dr. Luigi Suali of Bologna, a distinguished pupil of Professor Hermann Jacobi.

The other work taken in hand is the Lower Ladakhi Version of the Kesar Saga by the Rev. A. H. Francke, Moravian missionary. The version was dictated slowly to him by an inhabitant of Kholotse who was brought up in Lardo near Tagmacig, and is likely to clear up many obscure points in the Kesar epic.

Of the works that came to an end the most important is an English translation of the Mārkaṇḍeya Purāṇa by the Hon'ble Mr. Justice F. E. Pargiter. The work was undertaken 20 years ago, and after many interruptions has now come to an end. The conclusion of the editor is that the work was written at two different periods, one some centuries B.C., the other some centuries A.D. The scene is laid in Central India amid the wilds of the Vindhyas.

Another is the Kāla Viveka by Jimūta Vāhana, under the editorship of Paṇḍita Pramatha Nātha Tarkabhūṣaṇa, Professor of Smṛti in the Sanskrit College, Calcutta. In the preface, the editor determines the long unsettled point of the author's era, which he believes to have been A.D. 1191.

The Tattvārthādhigamasūtra, by Umāsvāti Vācaka, was composed at Pāṭaliputra early in the second century A.D. It is a curious work giving the cosmogony, configuration of the earth and heavens and so on, of the Jains of his day. It was edited by Vakil Keshablal Premchand of Ahmedabad, under the supervision of Professor Hermann Jacobi.

Śuddhi Kaumudī by Govindānanda Kavi Kaṅkanācārya, under the editorship of a young *tol* paṇḍit of Bhāṭpāḍā, named Kamala Kṛṣṇa Smṛtibhūṣana, has come to an end, practically completing the whole series of Govindānanda's work. The series was written between A.D. 1478 and 1535. It was composed for the benefit of the Vaidika brahmanas professing principally the Ṛg Veda, and

preceded the code of Raghunandana, the standard work of the Bengal school, by at least half a century.

Professor Dr. W. Caland of Utrecht, Holland, has been obliged to put a stop to his edition of the Srauta Sūtra of Baudhāyana, after the ninth Praśna, for want of MS. materials.

The Society's stock has been arranged by the Assistant Secretary, and the Cashier is engaged in counting the books and writing up the stock-book.

On an application from Prof. Louis de la Vallée Poussin, his name was placed on the list of individuals in Europe receiving the Bibliotheca Indica gratis.

The Council sanctioned the publication in the Bibliotheca Indica of an Index of Place names to the second volume of Col. Jarrett's translation of the Ain-i-Akbari, compiled by Mr. W. Irvine.

Owing to financial difficulties (see Appendix-Accounts) of the Oriental Publication Fund the Council sanctioned Rs. 2,000 from the fund of the Society as an advance to pay off the bills passed for payment and for work already done.

Search for Sanskrit MSS.

This department published the "Catalogue of Palm leaf and selected paper MSS in the Durbar Library, Nepal," by Mahāmahopādhyāya Haraprasād Shāstrī. It gives descriptions of 457 rare and valuable MSS., some of them written in characters of the 7th and 8th centuries. It brings many tantric works to light, and its post-colophon statements have enabled Professor C. Bendall to compile a chronological list of Nepal kings, fuller and more accurate than those hitherto published by him. This Catalogue has been published as an extra number of the "Notices of Sanskrit MSS.'

The third volume, in course of publication, will contain notices of 366 MSS. mostly seen in Benares.

The year has been very fruitful in the collection of MSS., no less than 1,360 having been acquired. Of these about 1,100 are Jain MSS. This, with about 800 Jain MSS., already collected with great industry from various quarters, raises the Government Jain collection to 2,000. The Jaina works are in Sanskrit, Jaina Prakrit, Madwari, Guzerati, Hindi and other languages, and contain works of all classes—stotras, biographies of saints, Angas, commentaries, and so on. The collection brings to light two facts—that the Jainas had tantras, and that they had smṛtis of their own and were not dependent on brahmanical smṛtis as hitherto supposed.

At the request of His Honour the Lieutenant-Governor of Bengal, ten bound copies of the Notices of Sanskrit MSS., Extra No. of 1905, containing a Catalogue of Palm-leaf and selected paper MSS., belonging to the Durbar Library, Nepal, was presented to the Nepal Durbar, in return for their courtesy to Professor Bendall and Mahāmahopādhyāya Haraprasād Shāstrī, when on their visit to Nepal in 1898, for the purpose of compiling this work.

In response to an application made by the Society, the Government of India sanctioned a special grant of Rs. 5,000 for the purchase, on behalf of Government, of a valuable collection of Jain MSS.

Search for Arabic and Persian MSS.

During the year, the search has been conducted by Dr. Ross with great success, and a considerable number of important MSS. acquired. The public have become acquainted with the existence of this search, and offers of valuable MSS. are being received from all parts of India. To meet these opportunities of acquiring really good MSS., the Council has applied to the Government of India for an extra grant of Rs. 5,000. The following first Annual Report for the official year 1904-1905, was submitted to Government by Dr. Ross :—

Report on the Search for Arabic and Persian MSS. for the Official year 1904-1905.

The work has been of two kinds: (1) Research in existing libraries; (2) Purchase of MSS. offered for sale. In this latter task I had in view the principle of purchasing only rare works and MSS. of ancient date. I have been fortunate enough to find some really good MSS. of early authors, copies of which are not to be found in any of the European libraries, and these have been bought for the Society. I shall notice some of them in the course of my report. The field is still to a great extent unexplored, and we can only gradually discover the obscure corners in which these oriental treasures lie hidden and uncared for. Up till now the search for MSS. has been confined to the town of Lucknow, which was the centre of Muhammadan learning and literature in India after the decline of the Moghul Power.

Lucknow abounds in libraries. Some of them are really first-class ones, and others, though small by comparison, contain very valuable books. I give below a short account of the libraries visited during the year.

I. Maulavi Nasir Hosain's Library.

Maulavi Nasir Hosain is a learned Mujtahed of the Shi'ah community, and his library is located in the Nazim's garden at Lucknow. This library contains some very rare and valuable MSS., including a priceless collection of books on History and Biography of Traditionists, and India should be proud to possess such a library. This library owes its origin to Maulavi Hamid Hosain, the deceased father of Maulavi Nasir Hosain. This is the only library of its kind in Lucknow containing religious books of both Sunnis and Shi'ahs. The books here are arranged in different groups according to the different branches of literature and science. In all there are 22 book-cases containing abont 6,000 volumes. There

is unfortunately no proper catalogue of this library. This valuable collection of MSS. includes 20 works on the principles of Shi'ah religion known as the *Usul*. The four books on Hadis, which are considered to be the great authorities of the Shi'ahs, and upon which the Shi'ah doctrine entirely depends, have, in fact, been abridged from 400 books on Hadis, each of which is called *Asl*. Thus the sources of the four books: (*a*) Kafi; (*b*) Man la Yahduruhu-al-Faqih; (*c*) Tahdib-ul-Ahkam, and (*d*) Istibsar, are 400 books. And of these 400 books about 92 *Usuls*, 20 are in this library, 12 are in the library of the late Syed Taqi in Lucknow, and 60 are in the library of the late Maulavi Gulshan Ali at Jonepore.

There is a book here named Kitab-ul-Munammaq, by Abu Ja'far Muhammad bin Habib Hashimi Baghdadi, died A.H. 245. It is a history of the tribe of Quraish. This unique copy belongs to the 13th century.

II. Library of the late Maulavi Abdul Hai.

This library was founded by the late Maulavi Abdul Hakim, father of Maulavi Abdul Hai. It is now in the possession of Mufti Muhammad Yusuff, the son-in-law of the late Maulavi Abdul Hai. There is a manuscript catalogue in this library in which the books are arranged and classified according to the different subjects they treat of. The number of pamphlets on different subjects that are to be found here is very remarkable. I had a copy of this catalogue made for purposes of reference. This library contains some 4,000 volumes of ancient and modern authors.

III. Library of Maulavi Abdur Ra'uf.

The real founder of the library is the late Maulavi Abdur-Razzaq, but it is now in the possession of his grandson Maulavi Abdur Ra'uf. The books are better arranged here than in the other two libraries. There is a manuscript catalogue in which books are arranged according to the different subjects they treat of.

This library contains about a thousand manuscripts, but a few of them only are the production of old authors, and even those are very commonly known and cannot claim to have any rarity.

In this library, however, the works of modern authors, *i.e.*, those authors who flourished after the 8th century Hejira are more numerous than in the other libraries.

The following are the more interesting small libraries of Lucknow:—

1. Library of Nawab Mehdi Hasan.
2. Library of Meer Agha.
3. Library of Maulavi Luft-i-Hosain.

As to the purchase of manuscripts, I beg to say that the total number of books bought for the Asiatic Society of Bengal is 113. This comprises books on almost all branches of literature and

science. Below I give a list of some of these books with very short descriptions of each :—

1. Qurb-ul-Isnad ; a book on Imamite Tradition.
Author—Abdullah bin Ja'far bin al Hosain bin Malik bin Jami'-al-Himyari. He was the disciple of Imam Abu Mahammad-i-'Askari, and died in A.H. 290. Neither the book nor its author is mentioned by either Brockelmann or Ahlwardt. Dated A.H. 1068.

2. Jami'-ul Iskandarani, a collection of the works of Galen made by the Alexandrians, and translated by Hunain bin Ishaq ; for particulars and full information consult Ibn Oseiba, vol. I., pp. 90-92. These interesting pamphlets by Galen deal with different branches of medical science, and in no European library is the complete collection to be found.

3. Sharh Kashf-ul-Asrar ; a commentary by Najmud-Din al Katibi, died A.H. 675, on Kashf-ul-Asrar of Muhammad bin Khunji. Only two copies of the text Kashf-ul-Asrar are known—one in the Escurial Library, and the other in Cairo ; but no copy of the commentary is mentioned by either Brockelmann or Ahlwardt. The manuscript bears two seals of the last two kings of Oudh and several other important personages.

4. Kifayat-ul-Asar ; a Shi'ah work in praise of the twelve Imams. Dr. Ahlwardt (Berlin catalogue, vol. ix., No. 9675) mentions Ibn-i-Tawus as the author of the book. But the genuine author of the book appears to be 'Ali bin Muhammad bin 'Alial-Qummi.

5. Tafsir Zubdat-al Bayan ; a commentary on the Quran by Ahmad bin Muhammad Ardabili, died A.H. 993. (Not mentioned by Brockelmann or Ahlwardt.)

6. Kitab-al-Arba'in ; a collection of 40 Imamite Traditions by Shekih-ush-Shahid Muhammad bin Makki.

7. Shawariq-al-Lamiah ; a book on the knowledge of God and his attributes, by Hosain bin Abdus Samadal-Harisi, died A.H.904. (Not mentioned by Brockelmann or Ahlwardt.)

8. Kitab-al-Qaza-wal-Qadr ; a book on God's Decree and Destiny, by Sudruddin Shirazi. (The work is not mentioned by Brockelmann.)

9. Rauzat-ul-'Ulama ; a book on theology, by Abu 'Ali Hosain bin Yahya Zandubasti. (There is no mention of this work in Brockelmann)

The following three manuscripts are the most important of all collected in point of age, as the dates mentioned against them will show :—

		Date A.H.
1.	As-Sihah of al Jawhari	(Circa) 450
2.	Sharh-i-Kashful Asrar	740
3.	Tanqih-ul-Maknun	775

The dates of a large number of manuscripts range from A.H. 800 to 1000.

Bardic Chronicles.

At the request of the Government of India, the Society undertook a search for MSS. of Rajput and other bardic chronicles,

similar to the work of Chand Bardai already published by the Society, and as a preliminary to make a inspection of libraries of Rajputana and Gujrat believed to contain such works. For this purpose the Government has sanctioned a grant of Rs. 2,400 to the Society for expenditure during the year. The work will begin as soon as a suitable pundit can be found.

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The Report having been read and some copies having been distributed, the Hon. Mr. Justice Asutosh Mukhopadhyaya, Vice-President, addressed the meeting.

Annual Address, 1905.

During many years past, it has been the established practice for the President of our Society to deliver an address on the occasion of the Annual Meeting. Such addresses have varied widely in scope, but many of them have, from time to time, reviewed the work of the Society, and the progress of literary and scientific research in connection with questions which have engaged the attention of our members. On the present occasion, all of us had hoped to listen to the eloquent words of His Honour the Lieutenant-Governor, and to benefit by his kindly advice and encouragement. But public business of a pressing character has kept him away, and no one, I know, regrets his absence more keenly than His Honour himself does: our rules, however, are unfortunately so inelastic that the dates of our meetings cannot be altered so as to suit the convenience even of our President. It is, therefore, by an accident that I find myself called upon to take the chair this evening, and the time at my disposal since I have had an intimation that I should have to do so, has been so limited as to make it impossible for me to attempt an elaborate review of the work of the Society during the year 1905, and of the progress of the researches in which the Society is interested. I must consequently crave your indulgence for confining my remarks to a few points of special interest and importance.

During the last year, the material prosperity of the Society has been satisfactory, and the number of members on our rolls now exceeds what it has been in recent years. But we have lost, during the year, one of our most distinguished Past Presidents, who was originally one of our life-members and subsequently an Honorary Member. A full account of the scientific work of Dr. W. T. Blanford, who passed away, full of years and honours, on the 23rd June, 1905, is contained in the obituary notice contributed by Mr. Holland, which will be published in our Proceedings; but his services to the Society were so conspicuous that they demand more than a passing reference on the present occasion. He joined the Society in 1859, and the number of papers he had contributed to our Journal and Proceedings between that date and 1883 exceeds seventy. I make a pointed reference to this fact,

because, if the Society is to flourish and maintain its reputation as a learned body, it can only be by the publication of original contributions of its members. The researches of Dr. Blanford related principally to Geology and the cognate branches of natural science, namely, Geography and Zoology, but it must not be supposed that they recorded merely details of observation, for many of them treated of the fundamental principles of Geology and Zoology and are rightly regarded as classical memoirs in the history of those sciences. Reference may specially be made to his remarkable address to the British Association at Montreal in 1884, delivered as President of the Geological section; and his equally important address to the Geological Society of London when he was its President five years later. In the first of these addresses, he demonstrated the truth of Huxley's Theory of Homotaxis, in the descent of isolated *faunas* and *floras*, and in the second, he strengthened the theory of land connection in former times in certain cases across what are now broad and deep oceans. These generalisations were the result of inferences drawn from a mass of details indicating the accuracy which always characterized his work. No better illustration of this remarkable accuracy can be mentioned than his Geological maps of the coal-field, which, as Mr. Holland observes, have always been and still are the guide of colliery managers. It is impossible, I think, to estimate too highly the practical utility of these maps in exploring the mineral resources of the country. I do not use, therefore, the language of mere platitude when I say that, by the death of Dr. Blanford, we have lost from our ranks a man remarkable for his scientific attainments and for his contributions to the advancement of science, and that the members of this Society will fail in their duty if they do not raise in his memory a suitable memorial in this hall.

I shall turn now to the work of the members of the Society during the last year, but before I deal with it, some reference is necessary to what appears to me to be the most important event of the year from the point of view of oriental research and scholarship. Members of the Society are no doubt aware that a large number of valuable manuscripts and books were brought from Tibet by the late Tibet Mission, which are now desposited in the British Museum in London. If I am not very much mistaken, the materials thus placed at the disposal of scholars are calculated to throw light upon some of the darkest corners of Indian history and antiquities. That such a result is more than likely will be obvious, if we remember what intimate relation subsisted at one time between Tibet and India, the birthplace of Buddhism, and to what extent the literature of Tibet has been influenced by the literature of India. It is well known that the two chief periods in the history of the literature of Tibet are the period of translations extending roughly from the seventh to the twelfth century of the Christian era, and the period of original composition extending from the thirteenth century to the present times. In the first of these periods the Tibetan monks were principally engaged

in enriching their literature by faithful versions of many of the great books of Sanskrit literature. The course which the secluded monks of Tibet pursued was somewhat similar to what was followed in Rome, when Greek authors were freely copied by the dramatists of the Republic; and in England, when the great translations which form a remarkable monument of English literature were made during the Tudor period. Now it has so happened in the case of Tibetan literature, that although the Sanskrit originals have been, in many instances, lost, in course of time in this country, the translation and in some cases the original itself has survived in Tibet. As one illustration, mention may be made of the Avadana Kalpalata of Kshemendra, no manuscript of which could be traced in this country; indeed, it was supposed to have been lost, but was recovered in Tibet, in original, with a Tibetan version. The publication of this work was undertaken some years ago by our Society, and although some progress has been made, it has remained in abeyance by reason of the death of one of the editors. If one wishes to find a parallel to an incident of this description in the history of modern literary research, one must travel to Egypt, which has given back to Europe some of the most exquisite products of the Greek intellect, the fragments of Bacchylides, the Mimes of Herondas, and the long-lost work of Aristotle on the Constitution of Athens. It is obvious, therefore, that a wider knowledge of Tibetan literature, specially of such portions of it as are translated or mainly founded on Sanskrit literature, must throw considerable light on the latter, either by giving us back books which have been lost in this country or by enabling us to determine with some approach to certainty, the original forms of works which, as they now stand, are believed on good grounds to be full of later interpolations. It has been generally supposed that the literature of Tibet is mainly, if not entirely, Buddhistic; this, however, is erroneous because the Tibetans possess translations of Kalidas's Meghduta, Vararuchi's Satagatha, Rabigupta's Aryakosh, Valmiki's Ramayana, Vyasa's Mahabharat, Chanakya's Nitisastra, Dandi's Kavyadarsha, Panini's Vyakarana, Chandra Vyakarana, Pramanasamuccaya of Dignaga, and various other works including several, the originals of which cannot be traced in this country. It looks, therefore, as if the most profitable course which a serious student of Indian antiquities may pursue is to take himself to the study of Tibetan, and a minute examination of the manuscripts at our disposal, beginning with those which were brought nearly eighty years ago by Mr. Hodgson while Resident at Nepal and ending with those brought last year by the Tibet Mission. Of the manuscripts brought by Mr. Hodgson, those known as the Kangyur, consisting of a hundred volumes, are deposited in our library, while those known as the Tangyur, consisting mainly of non-Buddhistic Sanskrit works and extending over two hundred and twenty-five volumes, were deposited in the India Office, London. Only a small fragment of these has, up to the present moment, been worked through by scholars, and as regards those brought by the Tibet

Mission, they have not yet been completely examined and catalogued. But an inkling of what rich harvest is in store for us may be obtained from one or two recent instances. Thus the Tibetan translation of the logical work of Dignaga, which must be placed in the front rank of works on modern Nyaya, but the original of which is not available in this country, enables us to trace the history of the rise and development of this branch of Hindu Philosophy. I need only refer to the scholarly paper on the subject by Mahamahopadhyaya Satis Chandra Vidyabhusana, published in the November number of our Journal. Another valuable paper from the same learned member which opens the first volume of our new series of Memoirs indicates how additional light may be thrown on the somewhat obscure problem of the progress of Tantricism by an intelligent study of Tibetan scrolls and images. The existence of the Tantra Sastras may thus apparently be traced at least as far back as the 6th century A.D., and the question may ultimately arise whether the credit or discredit of founding that system and its attendant practices may not have to be shared by the Buddhists along with the Brahmins. It would be a mistake, however, to suppose that the only department of knowledge which is likely to be benefited by an examination of Tibetan books and manuscripts is the domain of Sanskrit literature; if from Tibetan sources we are likely to be in a position to determine with some precision the early form of books like the Ramayana and the Mahabharata, there can be no reasonable doubt that a somewhat similar result must follow in the case of Pali literature as well. It has been usually supposed hitherto that no Pali books were ever translated into Tibetan, and that the Tibetan monks confined their attention to versions of Buddhistic works written in Sanskrit. It now turns out, however, that almost the entire Pali Tripitakas are preserved in Tibetan in translation. It is difficult to say whether the translations were made direct from Pali into Tibetan, or, as seems not unlikely, were first translated into Sanskrit and then into Tibetan. The Sanskrit versions, however, are extremely rare. Scholars interested in Pali literature must consequently turn to Tibetan sources to determine to what extent interpolations have been introduced by the Buddhists of Ceylon and Burma into their religious books. Under these circumstances, I trust the case is not put too high in favour of Tibetan studies, when it is maintained that they are likely to open up sources from which considerable light may be expected upon the history of Sanskrit as well as Pali literature.

Amongst the papers published in our Journal and Proceedings and in the new series of Memoirs, there have been several contributed during the last year which may be regarded as of more than average interest and importance. Babu Ganga Mohan Laskar, a young epigraphist of talent who made a special study of the epigraphy and palæography of Northern India as a research scholar under the Government of Bengal, and who has prepared a complete concordance to the Inscriptions of Asoka, contributed a note on four new copper-plate charters of

the Somavansi Kings of Kosala. These charters, written in characters of the 10th century, refer to a dynasty of four kings who reigned for over half a century. They were called Trikalinga Adhipati and their dominions included Tosali, which the writer corrects into Kosala. I am not quite sure that this emendation is well founded; and it has been suggested on good grounds that the place may be Dhauli, near which there is an inscription of Asoka addressed to the officers of Tosali. Babu Monmohan Chakravarti furnished an edition of the Pabanaduta, which was first brought to the notice of the Society in 1898 by Mahamahopadhyaya Haraprasad Sastri. The work appears to have been written by Dhoyika, one of the court poets of Lakshman Sen, the last Hindu King of Bengal. Pandit Yogesa Chandra Sastree discussed the question of the identity of the Prime Minister of the same king, Halayudha, the author of Brahmana Sarvasa. Mahamahopadhyaya Haraprasad Sastri contributed a paper on the history and development of the Nyaya Philosophy, which must be regarded as one of a highly controversial character. It is well known that the Nyaya Sutras, attributed to Gautama or Akshapada, have been studied in this country with the aid of the Vashya, the Vartik and other commentaries by eminent Sankrit writers. Hindu Logic, however, has travelled to China and Japan, and there it has been studied for centuries on somewhat different lines, as the students there start with Dignaga as the last of the great writers on Logic in India. The work of Dignaga was translated into Chinese about the middle of the 7th century by Hiouentsiang; and two of his disciples, one a Chinese and the other a Japanese, wrote great commentaries on it. The history of the introduction of Hindu Logic into China and Japan is a subject of abiding interest, and was examined recently by a distinguished Japanese scholar, Mr. Sugiura, in a thesis presented to the University of Pennsylvania. We have, therefore, from Chinese and Japanese sources, Hindu Logic as it existed in the beginning of the 7th century, and on that foundation Pandit Haraprasad Sastri has set himself to investigate the original form of the Nyaya Sutras. His conclusion is that the work is not homogeneous but consists of three independent treatises on Logic and three independent treatises on Philosophy. He maintains that the system was originally Hindu, dating back to pre-Buddhistic times, that it was modified by an infusion of Buddhistic ideas and subsequently altered again by the Saivas. The question, as I have already indicated, is one of great difficulty, and inferences, when they are drawn largely from internal evidence, have always to be accepted with caution. I trust the problem will engage the attention of other members of the Society, but unfortunately we have none who is qualified to approach the subject with a first-hand knowledge of Chinese, Japanese, and Sanscrit.

Tibetan and Pali Scholarship are well represented in the contributions of Rai Sarat Chandra Das, Bahadur, and Mahamhopadhyaya Satis Chandra Vidyabhusana. The papers contributed by the former cover several centuries of the history of Tibet, and

in addition to an account of the various monasteries in Tibet and the rise of different sects of Buddhism in that country, throw considerable light upon the external history of Tibet in its relations with Mongolia and China. Professor Satis Chandra's papers, to two of which I have already referred, bear testimony to his acquaintance with Pali and Tibetan. His paper on Anurudha Thera, who was born at Kanchi and whose chief work was done at Tanjore and Tinnevelly, shows that Buddhism lingered in the great cities of Southern India as late as the 12th century A.D., and that Pali used to be studied even up to that time. His other paper on Dignaga, to which I have previously referred, enables us to fix the end of the 4th century as the time when that great authority on Indian Logic flourished, and this conclusion agrees substantially with that of Mahamahopadhyaya Haraprasad Sastri, who placed him in the 5th century and varies slightly from the result obtained by the Japanese scholar Takakusu, who, in a powerful article on Vasubandhu, contributed to the Royal Asiatic Society of London last year, fixed the period in the sixth century.

Apart from these papers, which are more or less of a philological character, the number of papers dealing with historical problems has been unusually limited. Mr. Irvine gave us a further instalment of his exhaustive monograph on the Later Moghuls, while Mr. Beveridge brought to light some interesting facts about the Emperor Babar, not mentioned in Abul Fazl and overlooked by Erskine. It must be conceded, however, that the history of the Mahomedan period deserves greater attention at the hands of our members.

In the department of the physical and natural sciences, we have had ample indication of activity on the part of our members. Botany is represented by further work on the Flora of the Malayan Peninsula by Sir George King and Mr. Gamble. Dr. Annandale's Zoological contributions include papers on Indian snakes describing the additions made to the collection in the Indian Museum, and on the lizards of the Andaman Islands. Chemistry is represented in two interesting papers, one on Sal Ammoniac by Mr. Stapleton, and the other on Alchemical Equipment in the 11th century by Mr. Stapleton and Mr. Azoo. In the first of these papers an attempt is made to carry back the history of Sal Ammoniac through Mahommedan times and to throw light on the primitive conceptions of nature which led to its introduction as an alchemical drug. The paper is of value as illustrating the close relation between animistic theories and the first germs of physical science in the East. The second paper is mainly historical in character and embodies an analysis of an Arabic treatise on Alchemy composed towards the beginning of the 11th century A.D., which shows the great importance attached to weights in chemical operations, seven centuries before the age of Black and Lavoisier. In Geology, we had a valuable note from Mr. Silberrad on the chemical analysis of clay found in Bundelkhand, and an extremely instructive lecture by Mr. Holland on the Kangra Valley earthquake illustrated by a series of lantern slides. Finally, we had

from Major Rogers an important paper on fevers in Dinagepore, followed by a very suggestive lecture on Calcutta fevers.

In the department of Anthropology, although we have had important contributions to local folklore and ethnology, I am afraid it would be difficult to say that it has aroused as much interest as its nature and importance would justify. In connection with this subject, our Anthropological Secretary, Dr. Annandale, has made an important suggestion which, when it is carried out with the co-operation of our members, will, I trust, promote and popularise its study. The proposal is to publish in our Memoirs a series of papers entitled "Miscellanea Ethnographica" giving illustrations and descriptions of implements, utensils, apparatus, weapons and the like from different parts of India and the neighbouring countries. The scheme is one of great practical importance, because, if realized, it will help to bring together and preserve a mass of scattered knowledge which would otherwise be probably lost. Very little information is available regarding the distribution, uses, and manufacture of the common implements of the people, specially the apparatus used by different tribes and castes in agriculture, hunting and other pursuits of daily life. It is a great mistake to suppose that specimens of these are of value only if they are objects of rarity or artistic workmanship It is equally erroneous to hold that such specimens are of value only if they are habitually used by primitive races in the lowest scale of civilization. The truth is that these implements of daily life, if properly studied, furnish an excellent guide in the examination of the growth of human intelligence. It is essential therefore that such specimens should be collected, classified and studied, before they disappear in the face of the European or semi-European methods and implements which are fast making their way in many directions. Dr. Annandale has recently given us illustrations of the work which may usefully be taken up in this direction by exhibiting to members of the Society the use of the Blow gun in Southern India and the Malayan Peninsula, and the use of peculiar types of weighing beams in different parts of Asia, closely analogous to what prevails in Europe and is there traceable to Scandinavian influences. The subject is obviously one of great interest and importance, and I trust it may engage the attention of some of our members.

During the last year, the publication of Oriental works and their translations in the series known as the "Bibliotheca Indica" has been carried on with more than usual zeal and activity. As a result, not only has the surplus in this fund been exhausted, but the Society has found it necessary to contribute temporarily a sum of Rs. 2,000 to meet the expenses for work already done. There will consequently be a reduction in the number of works to be published in the course of the present year, and the Council have decided that, in future, a complete list of the works which may be undertaken in the course of any one session, must be definitely settled and budgetted for in advance. Of the works which have been published during the year in the

"Bibliotheca Indica" an account has been given in the report submitted to you this evening. I would only invite attention to the completion of the English version of the "Markandeya Purana" by Mr. Justice Pargiter. The learned translator has furnished an elaborate introduction in which he shows that the work was composed at two widely distant periods, one probably some centuries before the beginning of the Christian era, and the other some centuries after it. The approaching retirement of Mr. Justice Pargiter cannot fail to be a source of sincere regret to every member of this Society, and the regret is deepened by the fact that there are few, if any, amongst the junior members of the distinguished service to which he belongs, who are qualified to take his place in the field of Oriental scholarship. Another work which was completed during the year and which deserves special mention is the Persian version of Morier's Haji Baba by Shaik Ahmad of Kirman, upon which Major Phillott had been engaged for some time past. It may no doubt be said that in undertaking the publication of this work, the Society has departed from its hitherto invariable practice of publishing only classical Arabic and Persian works. The work, however, furnishes so good an example of modern Persian, and is so truthful a picture of the manners and customs of the people, that its inclusion in our list of publications is amply justified. The value of the edition has been greatly enhanced by the notes of the editor, in which all the slang terms and colloquialisms not found in the dictionaries are lucidly explained.

There are two other topics to which I shall like to invite your attention before I bring my address to a close. During the year which has just ended, considerable progress has been made in the search for Sanskrit manuscripts, as also in the search for Arabic and Persian manuscripts. So far as the search of Sanskrit manuscripts is concerned, which was conducted under the supervision of Mahamahopadhyaya Haraprasad Sastri, the progress of the operations during the year is marked by three important events. The first is the publication of the Catalogue of Palm-leaf and selected paper manuscripts in the Durbar Library in Nepal. The second is the report submitted to Government on the progress of the search during the last five years The third is the acquisition of about twelve hundred Jain manuscripts for which the Government of India made a special grant of Rs. 5,000 to the Society. The Catalogue as also the Report contains valuable information upon Tantric literature, and they have been received with considerable interest by European scholars. The Jain collection has only been recently acquired and has not been yet completely catalogued. but so far as can be judged from the materials at our disposal. even these works may throw some light upon Tantric lore. We have thus accumulated a mass of material which is of the highest value in examining the political and literary condition of Eastern India for several centuries, as also in studying the evolution of the doctrines which lie at the foundation of our Tantras.

As regards the search for Arabic and Persian manuscripts

which was conducted under the supervision of our Philological Secretary, Dr. Ross, the success has been still more remarkable. The total number of manuscripts purchased up to the middle of October last was about seven hundred, and you will be able to appreciate the value of the collection when I tell you that manuscripts of great rarity have been acquired from different parts of India, such as Lucknow, Delhi and Hyderabad, as also from two valuable collections which were brought by two Arabian travellers. The books represent almost every branch of Oriental literature, and as many as eighty of these are unique, giving us works of ancient and modern authors which are not even mentioned in any of the European Catalogues. As regards the age of these manuscripts, a sufficient indication is afforded by the fact that at least a hundred of them range in date between the thirteenth and the fifteenth centuries. Dr. Ross has been able to secure autograph copies of the works of about sixteen authors, some of which bear the original corrections and marginal notes of the authors themselves, while the interest attaching to others is enhanced by the fact that they bear upon them lines from the pen of eminent scholars who flourished during the fourteenth and the fifteenth centuries. Amongst the most important of the additions made to the collection during the year, I may mention specially a work written in the fourteenth century by the Spanish Vizir Lisanuddin, which gives biographical notices of all the Moorish poets of the eighth century of the Mahomedan era. We have also secured an important book on tradition written by Yusoof bin Abdur Rahaman in A.D. 1341, which enumerates all the traditions and sayings of the Arabian Prophet, arranged in such a manner as to indicate at a glance how many traditions have referred to each traditionist. In addition to these we have secured the manuscript of an important work called "Rubab Nama," by the son of Jelaluddin Rumi, the greatest Sufi poet of Persia. When we add to these the valuable history of authors of the sixth century of the Mahomedan era compiled by Ispahani in the beginning of the thirteenth century A.D., we ought to be able to realize the value and the importance of the materials at our disposal. Our first duty is to undertake an examination of this collection and the preparation of proper catalogues. Our next duty would be the publication of some of these unique manuscripts and make them available to scholars all over the world. If we neglect the duty which has thus been cast upon us, we may rightly be likened to those unhappy beings who will hoard their wealth and neither use it themselves nor allow others to be benefited by it. From the generous aid which the Government of India has already given to us, we may legitimately expect that the Government will not be slow to render assistance if the work is undertaken and systematically carried on by competent scholars under the supervision of the Society. The past history of the Society, however, makes it painfully clear that, while the interests of Sanskrit learning have been carefully watched and nurtured, the interests of Arabic and Persian Literature have, of late years, been sadly neglected. In this department

at any rate we have distinctly lost ground since the days of Sprenger and Blochmann; and I trust that under the guidance of Dr. Ross, whose devotion to these studies is well known, a serious effort will now be made to retrieve our reputation in this direction.

I have now given you a brief, and, I am afraid, a very imperfect account of the work done by the Society during the last year, and I have ventured to indicate some of the directions in which research may be profitably carried on. Our illustrious founder defined the bounds of our investigation to be the geographical limits of Asia, and he sought to include within the scope of our enquiries whatever is performed by man or produced by nature. It is manifest that although our Society has been in existence for about a century and a quarter, the field of investigation has been by no means exhausted. True it is that we are no longer in a position to repeat the triumphs of the early years of our existence when Sir William Jones discovered Sanskrit and James Prinsep deciphered the edict of Asoka. Yet the problems in oriental scholarship, both literary and scientific, which still await solution, are so numerous and so fascinating, that I cannot conceive any adequate reason why our Society should ever languish.

The Chairman announced that the scrutineers reported the result of the election of Officers and Members of Council to be as follows:—

President.

His Honour Sir A. H. L. Fraser, M.A., LL.D., K.C.S.I.

Vice-Presidents.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.
T. H. Holland, Esq., F.G.S., F R.S.
A. Earle, Esq., I.C.S.

Secretary and Treasurer.

Honorary General Secretary:—J. Macfarlane, Esq.
Treasurer:—The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.

Additional Secretaries.

Philological Secretary:—E. D. Ross, Esq., Ph.D.
Natural History Secretary:—I. H. Burkill, Esq., M.A.
Anthropological Secretary:—N. Annandale, Esq., D.Sc., C.M.Z.S.
Joint Philological Secretary:—Mahamahopadhyaya Haraprasad Shastri, M.A.

Other Members of Council.

W. K. Dods, Esq.
H. H. Hayden, Esq., B.A., F.G.S.
E. Thornton, Esq., F.R.I.B.A.
Mahamahopadhyaya Satis Chandra Vidyabhushan, M.A.
Lieut.-Col. D. C. Phillott, 23rd Cavalry F.F.
C. Little, Esq., M.A.
Hari Nath De, Esq., M.A.
Major F. P. Maynard, I.M.S.
J. A. Cunningham, Esq., B.A.
Major W. J. Buchanan, I.M.S.

The Meeting was then resolved into the Ordinary General Meeting.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E., Vice-President, in the chair.

The minutes of the last meeting were read and confirmed.

Fifty-five presentations were announced.

It was announced that Mr. M. G. Simpson had expressed a wish to withdraw from the Society.

A vacancy having occurred owing to the death of Dr. W. T. Blanford, the Council recommended the Right Hon'ble Baron Curzon of Kedleston, M.A., D.C.L., F.R.S., for election as an Honorary Member at the next meeting.

For many years before coming to India as Viceroy, Lord Curzon had devoted himself to a large section of the problems which form the special province of this Society. In 1895, he was awarded the Patron's gold medal of the Royal Geographical Society for his great work on the Geography, History, Archaeology and political questions of Persia; for journeys of exploration in French Indo-China; and for an expedition to the Hindu Kush, the Pamirs and the Oxus. For many years, like the distinguished scientific man whose lamented death has created a vacancy in our list of Honorary Members, Lord Curzon was a Member of Council and Vice-President of the Geographical Society of which he has been a Fellow since 1888.

He was elected a Fellow of the Royal Society in 1898 before his departure for India.

Lord Curzon's personal interest in the welfare of this Society, shown on so many occasions, was an expression of his devotion to the questions which it is our main object to study. His address to this Society, at the Annual Meeting in 1899, on the value of ancient historical monuments in the country, found practical expression in his resuscitation of the Archæological Department for the restoration and study of historical marks that would otherwise have been lost.

Of all the distinguished men who have accepted our Honorary Membership, there is none who has been more closely linked with the special problems that form the peculiar province of the

original Asiatic Society, and none who would more thoroughly appreciate this opportunity of keeping in touch with the work which he commenced as an independent investigator and continued as Viceroy and Governor-General of India. Lord Curzon's eminence in the world of letters has been recognised by the Hony. Degree of D.C.L. conferred on him by the University in which he had had such a distinguished career before taking up political work.

T. H. Holland.

Mr. C. Russell, Professor, Presidency College, proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Mr. J. Macfarlane; Babu Girindra Kumar Sen, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; and The Hon. Mr. C. A. Logan, I.C.S., proposed by Mr. J. Macfarlane, seconded by the Hon. Mr. H. H. Risley, were ballotted for and elected Ordinary Members.

Mr. H. H. Hayden gave a lecture on the scenery of Tibet, illustrated by lantern slides.

The following papers were read:—

1. *Supplementary note on the Bengal poet Dhoyika and the Sena Kings.*—*By* Monmohan Chakravarti, M.A.

2. *A list of a small collection of Mammals from the plains of the Madura District.*—*By* R. C. Wroughton, *with notes by* Dr. N. Annandale.

The paper will be published in the *Memoirs*.

LIST OF MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL.

ON THE 31ST DECEMBER, 1905.

LIST OF OFFICERS AND MEMBERS OF COUNCIL OF THE ASIATIC SOCIETY OF BENGAL FOR THE YEAR 1905.

President :

His Honour Sir A. H. L. Fraser, M.A., LL.D., K.C.S.I.

Vice-Presidents :

The Hon'ble Mr. Justice Asutosh Mukhopadhyaya. M.A., D.L., F.R.S.E.
T. H. Holland, Esq., F.G.S., F.R.S.
C. W. McMinn, Esq., I.C.S. (retired.)

Secretary and Treasurer.

Honorary General Secretary : J. Macfarlane, Esq.
The Hon'ble Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., F.R.S.E.

Additional Secretaries.

Philological Secretary : E. D. Ross, Esq., Ph.D.
Natural History Secretary : Major L. Rogers, M.D., B.Sc., I.M.S.
Anthropological Secretary: N. Annandale, Esq., D.Sc., C.M.Z.S.
Joint Philological Secretary : Mahāmāhopādhyāya Haraprasād Shastri, M.A.

Other Members of Council.

The Hon'ble Mr. Justice F. E. Pargiter, B.A., I.C.S.
Kumar Ramessur Maliah.
I. H. Burkill, Esq., M.A.
H. E. Kempthorne, Esq.
W. K. Dods, Esq.
A. Earle, Esq., I.C.S.
Lieut.-Col. J. H. Tull Walsh, I.M.S.
H. H. Hayden, Esq., B.A., F.G.S.
E. Thornton, Esq., F.R.I.B.A.
Mahāmāhopādhyāya, Satis Chandra Vidyabhusana, M.A.
H. E. Stapleton, Esq., B.A., B.Sc.

LIST OF ORDINARY MEMBERS.

R. = Resident. N.R. = Non-Resident. A. = Absent. N.S. = Non-Subscribing.
L.M. = Life Member. F.M. = Foreign Member.

N.B.—Members who have changed their residence since the list was drawn up are requested to give intimation of such a change to the Honorary General Secretary, in order that the necessary alteration may be made in the subsequent edition. Errors or omissions in the following list should also be communicated to the Honorary General Secretary.

Members who are about to leave India and do not intend to return are particularly requested to notify to the Honorary General Secretary whether it is their desire to continue Members of the Society; otherwise, in accordance with Rule 40 of the rules, their names will be removed from the list at the expiration of three years from the time of their leaving India.

Date of Election.		
1903 Feb. 4.	R.	Abdul Alim. *Calcutta*,
1894 Sept. 27.	N.R.	Abdul Wali, Maulavie. *Ranchi.*
1895 May 1.	N.R.	Abdus Salam, Maulavie. M.A. *Cuttack.*
1903 April 1.	N.R.	Abul Aâs, Maulavie Sayid, Rais and Zemindar. *Patna.*
1901 Aug. 7.	A.	Adams, Margaret. Baptist Zenana Mission. *Europe.*
1904 Sept. 28.	N.R.	Ahmad Hasain Khan. Munshi. *Jhelum.*
1888 April 4.	R.	Ahmud, Shams-ul-ulama Maulavie. *Calcutta.*
1888 Feb. 1.	R.	Alcock, Lieut.-Col. Alfred William, M.B., LL.D., C.I.E., F.R.S. *Calcutta.*
1885 Mar. 4.	L.M.	Ali Bilgrami, Sayid. B.A., A.R.S.M., F.G.S. *Hyderabad.*
1899 Jan. 4.	N.R.	Ali Hussain Khan, Nawab. *Lucknow.*
1903 Oct. 28.	R.	Allan, Dr. A. S., M.B. *Calcutta.*
1900 Aug. 1.	R.	Allen, The Hon'ble Mr. C. G. H., I.C.S. *Calcutta.*
1874 June 3.	A.	Ameer Ali, M.A., C.I.E., Barrister-at-Law. *Europe.*
1893 Aug. 31.	A.	Anderson, Major A. R. S., B.A., M.B., I.M.S. *Europe.*
1884 Sept. 3.	A.	Anderson, J. A. *Europe.*
1904 Sept. 28.	R.	Annandale, Nelson, D.SC., C.M.Z.S. *Calcutta.*
1904 Jan. 6.	R.	Ashton, R. P. *Calcutta.*
1904 July 6.	N.R.	Aulad Hasan, Sayid. *Dacca.*
1870 Feb. 2.	L.M.	Baden-Powell, Baden Henry, M.A., C.I.E. *Europe.*

Date of Election.		
1901 Jan. 2.	A.	Badshah, K. J., B.A., I.C.S. *Europe.*
1898 Nov. 2.	A.	Bailey, The Revd. Thomas Grahame, M.A., B.D. *Europe.*
1891 Mar. 4.	N.R.	Baillie, D. C., I.C.S. *Ghazipur.*
1898 Aug. 3.	N.R.	Bain, Lieut.-Col. D. S. E., I.M.S. *Mercara.*
1900 Aug. 29.	R.	Baker, The Hon. Mr. E. N., C.S.I., I.C.S. *Calcutta.*
1905 Mar. 1.	R.	Banerjee, Muralidhar. *Calcutta.*
1896 Mar. 4.	N.R.	Banerji, Satish Chandra, M.A. *Allahabad.*
1869 Dec. 1.	L.M.	Barker, R. A., M.D. *Europe.*
1885 Nov. 4.	R.	Barman, Damudar Das. *Calcutta.*
1877 Jan. 17.	N.R.	Barman, H.H. The Maharaja Radha Kishor Dev. *Tipperah.*
1898 Mar. 2.	N.R.	Barnes, Herbert Charles, I.C.S. *Shillong.*
1902 May 7.	R.	Bartlett, E. W. J. *Calcutta.*
1894 Sept. 27.	R.	Basu, Nagendra Natha. *Calcutta.*
1895 July 3.	L.M.	Beatson-Bell, Nicholas Dodd, B.A., I.C.S *Europe.*
1876 Nov. 15.	F.M.	Beveridge, Henry, I.C.S. (retired). *Europe.*
1897 Feb. 3.	R.	Bloch, Theodor, PH.D. *Calcutta.*
1893 Feb. 1.	N.R.	Bodding, The Revd. P. O. *Rampore Haut.*
1885 Mar. 4.	A.	Bolton, Charles Walter, C.S.I., I.C.S. (retired). *Europe.*
1895 July 3.	N.R.	Bonham-Carter, Norman, I.C.S. *Saran.*
1890 July 2.	A.	Bonnerjee, Womes Chunder, Barrister-at-Law, Middle Temple. *Europe.*
1897 June 2.	R.	Bose, Annada Prasad, M.A. *Hooghly.*
1895 Mar. 6.	R.	Bose, Jagadis Chandra, M.A., D.SC., C.I.E., Bengal Education Service. *Calcutta.*
1880 Nov. 3.	N.R.	Bose, Pramatha Nath, B.SC., F.G.S. *Maurbhanj.*
1905 Mar. 1.	N.R.	Bose, Sasi Bhusan. *Giridi.*
1895 April 3.	F.M.	Bourdillon, Sir James Austin, K.C.S.I., C.S.I., I.C.S. (retired). *Europe.*
1860 Mar. 7.	L.M.	Brandis, Sir Dietrich, K.C.I.E., PH.D., F.L.S., F.R.S. *Europe.*
1905 Mar. 1.	N.R.	Brown, W. B., I.C.S. *Comillah.*
1901 Sept. 25.	R.	Buchanan, Major W. J., I.M.S. *Calcutta.*
1887 May 4.	R.	Bural, Nobin Chand, Solicitor. *Calcutta.*
1901 June 5.	R.	Burkill, I. Henry, M.A. *Calcutta.*
1896 Jan. 8.	N.R.	Burn, Richard, I.C.S. *Simla.*
1900 May 2.	N.R.	Butcher, Flora, M.D. *Ludhiana.*
1904 Aug. 3.	R.	Bythell, Major, W. J., R.E. *Calcutta.*
1898 Sept. 30.	R.	Cable, The Hon'ble Sir Ernest, *Kt.* *Calcutta.*
1901 Jan. 2.	A.	Campbell, Duncan. *Europe.*
1901 Mar. 6.	N.R.	Campbell, W. E. M., I.C.S. *Allahabad.*
1895 July 3.	R.	Carlyle. The Hon. Mr. Robert Warrand, C.I.E., I.C.S. *Calcutta.*
1905 May 3.	R.	Chakravarti. Dwarkanath. *Calcutta.*

Date of Election		
1890 June 4.	R.	Chakravarti, Man Mohan, M.A., B.L. Deputy Magistrate. *Howrah.*
1905 July 5.	R.	Chakravarti, Vanamali. *Calcutta.*
1901 June 5.	A.	Chapman, E. P., I.C.S. *Europe.*
1904 July 6.	A.	Charles, A. P., I.C.S. *Europe.*
1902 Aug. 27.	R.	Chaudhuri, A., Barrister-at-Law. *Calcutta.*
1893 Sept. 28.	R.	Chaudhuri, Banawari Lala, B.Sc., Edin. *Calcutta.*
1902 April 2.	R.	Chunder, Raj Chunder, Attorney-at-Law. *Calcutta.*
1905 Aug 2.	R.	Clemesha, Captain W. W., M.B., I.M.S. *Calcutta.*
1880 Aug. 26.	F.M.	Clerk, General Malcolm G. *Europe.*
1903 Aug. 26.	R.	Copleston, The Right Revd. Dr. Reginald Stephen, D.D. *Lord Bishop of Calcutta.*
1898 June 1.	F.M.	Cordier, Dr. Palmyr. *Europe.*
1876 Mar. 1.	F.M.	Crawford, James, B.A., I.C.S. *Europe.*
1901 June 5.	R.	Crawfurd, Major D. G., I.M.S. *Chinsurah.*
1887 Aug. 25.	R.	Criper, William Risdon, F.C.S., F.I.C., A.R.S.M. *Calcutta.*
1905 July 7.	R.	Cunningham, J A. *Calcutta.*
1895 July 3.	N.R.	Cumming, John Ghest, I.C.S. *Patna.*
1873 Dec. 3.	F.M.	Dames, Mansel Longworth, I.C.S. *Europe.*
1901 Aug. 28.	N.R.	Das, Govinda. *Benares.*
1905 Jan. 4.	R.	Dass, Mucksoodan. *Calcutta.*
1905 July 7.	N.R.	Das, J. N. *Khulna.*
1903 Feb. 4.	N.R.	Das, Rai Bahadur Bhawan, M.A. *Hoshiarpur.*
1879 April 7.	N.R.	Das, Ram Saran, M.A., Secy., Oudh Commercial Bank, Limited. *Fyzabad, Oudh.*
1900 July 4.	N.R.	Das, Syam Sunder, B.A. *Benares.*
1896 Mar. 4.	R.	Das-Gupta, Jogendra Nath, B.A., Barrister-at-Law. *Calcutta.*
1904 July 6.	N.R.	De, Brajendra Nath, M.A., I.C.S. *Hooghly.*
1904 Sept. 28.	N.R.	DeCourcy, W. B. *Cachar.*
1903 June 3.	R.	De, Hari Nath, B.A. (Cantab). *Calcutta.*
1895 Sept. 19.	N.R.	De, Kiran Chandra, B.A., I.C.S. *Faridpur.*
1902 Mar. 5.	R.	Deb, Raja Binoy Krishna, Bahadur. *Calcutta.*
1895 Dec. 4.	N.R.	Delmerick, Charles Swift. *Bareilly.*
1899 Aug. 30.	N.R.	Dev, Raj Kumar Satchidanand, Bahadur. *Deogarh, Sambalpur.*
1900 May 2.	N.R.	Dev, Raja Satindra, Rai Mahesaya. *Bansberia.*
1905 Aug. 2.	N.R.	Dev, Sri Kripamaya Ananga Bhimkishore Gajapati Maharaj. *Ganjam.*
1901 June 5.	N.R.	Dey, Nundolal. *Bhagulpur.*
1902 Feb. 5.	N.R.	Dixon, F. P. I.C.S. *Chittagong.*
1898 Jan. 5.	R.	Dods, W. K. *Calcutta.*
1902 July 2.	R.	Doxey, F. *Calcutta.*
1886 June 2.	R.	Doyle, Patrick, C.E., F.R.A.S., F.R.S.E., F.G.S. *Calcutta.*
1902 Jan. 8.	A.	Drummond, J. R., I.C.S. *Europe.*

Date of Election.		
1892 Sept. 22.	A.	Drury, Major Francis James, M.B., I.M.S. *Europe.*
1889 Jan. 2.	A.	Dudgeon, Gerald Cecil, Holta Tea Co., Ld. *Europe.*
1905 April 5.	N.R.	Dunnett, J. M., I.C.S. *Lyallpur.*
1879 Feb. 5.	F.M.	Duthie, J. F., B.A., F.L.S. *Europe.*
1892 Jan. 6.	N.R.	Dutt, Gerindra Nath. *Hutwa.*
1877 Aug. 30.	R.	Dutt, Kedar Nath. *Calcutta.*
1900 April 4.	A.	Dyson, Major Herbert Jekyl, F.R.C.S., I.M.S. *Europe.*
1900 July 4.	A.	Earle, A., I.C.S. *Europe.*
1903 Oct. 28.	R.	Edelston, T. D. *Calcutta.*
1903 May 6.	N.R.	Edwards, Walter Noel. *Sootea, Assam.*
1900 Mar. 7.	R.	Fanshawe, Sir Arthur Upton, C.S I., K.C.I.E., I.C.S. *Calcutta.*
1900 Aug. 29.	A.	Fanshawe, The Hon. Mr. H. C., C.S.I., I.C.S. *Europe.*
1905 Jan. 4.	R.	Fraser, His Honour Sir Andrew H. L., M A., L.L.D., K.C.S.I. *Calcutta.*
1901 Mar. 6.	A.	Fergusson, J. C. *Europe.*
1904 Aug. 3.	R.	Fermor, L. Leigh. *Calcutta.*
1894 Dec. 5.	A.	Finn, Frank, B.A., F.Z.S. *Europe.*
1898 Sept. 30.	R.	Firminger, The Revd. Walter K. M.A., *Calcutta.*
1902 April 2.	N.R.	Fuller, His Honour Sir Joseph Bampfylde, K.C.S.I. *Shillong.*
1903 Mar. 4.	R.	Gage, Captain Andrew Thomas, M.A., M.B., B.SC., F.L.S., I.M.S. *Sibpur.*
1893 Jan. 11.	N.R.	Gait, Edward Albert, I.C.S. *Chaibassa.*
1899 Aug. 30.	R.	Garth, Dr. H. C. *Calcutta.*
1902 June 4.	N.R.	Ghuznavi, A. A. *Mymensing.*
1889 Jan. 2.	R.	Ghose, Jogendra Chandra, M.A., B.L. *Calcutia.*
1905 July 7.	R.	Ghosh, Amulya Charan Vidyabhusana. *Calcutta.*
1902 Feb. 5.	R.	Ghosh, Girish Chunder, *Calcutta.*
1905 May 3.	N.R.	Ghosh, Hemendra Prasad. *Jessore.*
1889 Mar. 6.	R.	Ghosha, Bhupendra Sri, B.A., B.L. *Calcutta.*
1869 Feb. 3.	N.R.	Ghosha, Pratapa Chandra, B.A. *Vindyachal.*
1861 Feb. 5.	N.S.	Godwin-Austen, Lieut.-Colonel H. H., F.R.S., F.Z.S., F.R.G.S. *Europe.*
1905 July 7.	N.R.	Goswami, Hem Chandra. *Gauhati.*
1905 Aug. 2.	N.R.	Gourlay, Captain C. A., I.M.S. *Shillong.*
1897 July 7.	A.	Grant, Captain J. W., I.M.S. *Europe.*
1905 May 3.	R.	Graves, H. G. *Calcutta.*
1876 Nov. 15.	A.	Grierson, George Abraham, PH.D., C.I.E., I.C.S. *Europe.*
1900 Dec. 5.	L.M.	Grieve, J. W. A. *Kalimpong.*
1901 April 3.	N.R.	Guha, Abhaya Sankara. *Goalpara.*

Date of Election.		
1898 June 1.	N.R.	Gupta, Bepin Behari. *Cuttack.*
1898 April 6.	R.	Gupta, Krishna Govinda, I.C.S., Barrister-at-Law. *Calcutta.*
1898 Jan. 5.	N.R.	Gurdon, Major P. R. T., I.A. *Gauhati.*
1901 Mar. 6.	N.R.	Habibur Rahman Khan, Maulavie. *Bhikampur.*
1892 Jan. 6.	N.R.	Haig, Major Wolseley, I.A. *Berar.*
1904 Sept. 28.	N.R.	Hallward, N. L. *Shillong.*
1899 April 5.	A.	Hare, Major E. C., I.M.S. *Europe.*
1884 Mar. 5.	L.M.	Hassan Ali Mirza Sir Wala Qadr Sayid, G.C.I.E. *Murshedabad.*
1897 Feb. 3.	R.	Hayden, H. H., B.A., B.E., F.G.S., Geological Survey of India. *Calcutta.*
1904 June 1.	F.M.	Hewett, J. F., I.C.S. (retired). *Europe.*
1904 Dec. 7.	N.R.	Hill, E. G. *Allahabad.*
1892 Aug. 3.	N.R.	Hill, Samuel Charles, B.A., B.SC. *Nagpur.*
1872 Dec. 5.	A.	Hoernle, Augustus Frederick Rudolf, PH.D., C.I.E. *Europe.*
1891 July 1.	R.	Holland, Thomas Henry, A.R.C.S., F.G.S., F.R.S., Director, Geological Survey of India. *Calcutta.*
1898 Feb. 2.	R.	Hooper, David, F.C.S. *Calcutta.*
1884 Mar. 5.	N.R.	Hooper, The Hon. Mr. John, B.A., I.C.S. *Allahabad.*
1901 Dec. 4.	R.	Hossack, Dr. W. C. *Calcutta.*
1873 Jan. 2.	L.M.	Houstoun, G. L., F.G.S., *Europe.*
1905 July 7.	N.R.	Humphries, Edgar de Montfort, B.A., I.C.S. *Gonda.*
1890 Dec. 3.	N.R.	Hyde, The Revd. Henry Barry, M.A. *Madras.*
1866 Mar. 7.	F.M.	Irvine, William, I.C.S. (retired). *Europe.*
1903 Sept. 23.	A.	Ito, C. *Europe.*
1905 Nov. 1.	N.R.	Jackson, A. M. T., I.C.S. *Bombay.*
1904 Jan. 6.	R.	Jackson, V. H., M.A. *Calcutta.*
1899 April 5.	R.	Kempthorne, H. E. *Calcutta.*
1882 Mar. 1.	N.R.	Kennedy, Pringle, M.A. *Mozufferpore.*
1867 Dec. 4.	A.	King, Sir George, M.B., K.C.I.E., LL.D., F.L.S., F.R.S., I.M.S. (retired). *Europe.*
1904 May 4.	N.R.	Knox, K. N., I.C.S. *Banda.*
1896 July 1.	A.	Küchler, George William, M.A., Bengal Education Service. *Europe.*
1891 Feb. 4.	N.R.	Kupper, Raja Lala Bunbehari. *Burdwan.*
1899 Aug. 30.	N.R.	Lal, Dr. Mannu. *Banda.*
1902 Feb. 5.	N.R.	Lal, Lala Shyam. *Allahabad.*
1904 Jan. 6.	A.	Lal, Panna, M.A., B.SC. *Europe.*
1902 Jan. 8.	A.	Lall, Parmeshwara. *Europe.*
1887 May 4.	L.M.	Lanman, Charles R. *Europe.*
1889 Mar. 6.	R.	La Touche, Thomas Henry Digges, B.A., Geological Survey of India. *Calcutta.*

Date of Election.		
1900 Sep. 19.	A.	Law, The Hon. Sir Edward F. G., K.C.M.G., C.S.I. *Europe.*
1902 July 2.	N.R.	Leake, H. M. *Saharanpur.*
1889 Nov. 6.	R.	Lee, W. A., F.R.M.S. *Calcutta.*
1903 July 1.	N.R.	Lefroy, Harold Maxwell. *Mozufferpur.*
1900 May. 2.	A.	Leistikow, F. R. *Europe.*
1902 Oct. 29.	R.	Lewes, A. H. *Calcutta.*
1889 Feb. 6.	R.	Little, Charles, M.A., Bengal Education Service. *Calcutta.*
1904 Oct. 31.	R.	Longe, Col. F. B., R.E. *Calcutta.*
1902 July 2.	R.	Luke, James. *Calcutta.*
1905 Aug. 2.	R.	Lukis, Lt.-Col. C. P., I.M.S. *Calcutta.*
1869 July 7.	A.	Lyall, Sir Charles James, M.A., K.C.S.I., C.I.E., LL.D., I.C.S. (retired). *Europe.*
1870 April 7.	L.M.	Lyman, B. Smith. *Europe.*
1896 Mar. 4.	N.R.	MacBlaine, Frederick, I.C.S. *Nadia.*
1902 July 2.	A.	Macdonald, Dr. William Roy. *Europe.*
1901 Aug. 7.	R.	Macfarlane, John, Librarian, Imperial Library. *Calcutta.*
1893 Jan. 11.	L.M.	Maclagan, E. D., M.A., I.C.S. *Simla.*
1891 Feb. 4.	N.R.	Macpherson, Duncan James, M.A., C.I.E., I.C.S. *Bhagulpur.*
1902 April 2.	N.R.	Maddox, Captain R. H., I.M.S. *Ranchi.*
1893 Aug. 31.	N.R.	Mahatha. Purmeshwar Narain. *Mozufferpore.*
1895 Aug. 29.	R.	Mahmud Gilani, Shamas-ul-Ulama Shaikh. *Calcutta.*
1898 Nov. 2.	N.R.	Maitra, Akshaya Kumar, B.A., B.L. *Rajshahi.*
1889 Jan. 2.	R.	Maliah, Kumar Ramessur. *Howrah.*
1901 June 5.	R.	Mann, Harold H., B.SC. *Calcutta.*
1905 Dec. 6.	R.	Marsden, Edmund, B.A., F.R.G.S. *Calcutta.*
1902 May. 7.	N.R.	Marshall, J. H. *Simla.*
1903 Aug. 5.	R.	Masoom, Dr. Meerza Mohammad. *Calcutta.*
1892 April 6.	R.	Maynard, Major F. P., I.M.S. *Calcutta.*
1905 Aug. 2.	R.	McCay, Captain D., I.M.S. *Calcutta.*
1901 Aug. 28.	R.	McLeod, Norman. *Calcutta.*
1899 Feb. 1.	N.R.	McMahon, Major Sir A. H., K.C.I.E., C.S.I., C.I.E., I.A. *Quetta.*
1899 Mar. 1.	R.	McMinn, C. W., B.A., I.C.S. (retired). *Calcutta.*
1905 Feb. 1.	R.	Megaw, Captain J. W. D., I.M.S. *Calcutta.*
1895 July. 3.	N.R.	Melitus, Paul Gregory, C.I.E., I.C.S. *Gauhati.*
1886 Mar. 3.	L.M.	Metha, Rustomjee Dhunjeebhoy, C.I.E. *Calcutta.*
1900 Jan. 19.	R.	Michie, Charles. *Calcutta.*
1884 Nov. 5.	R.	Middlemiss, C. S., B.A. Geological Survey of India. *Calcutta.*
1884 Sep. 3.	R.	Miles, William Harry. *Calcutta.*
1904 April 6.	N.R.	Miller, The Hon. Mr. J. O., I.C.S., C.S.I. *Nagpur.*
1898 April 6.	N.R.	Milne, Captain C. J., I.M.S. *Lahore.*
1874 May. 6.	F.M.	Minchin, F. J. V. *Europe.*

Date of Election.		
1897 Jan. 6.	N.R.	Misra, Tulsi Ram. *Awagarh.*
1901 Aug. 28.	R.	Mitra, Kumar Narendra Nath. *Calcutta.*
1897 Nov. 3.	R.	Mitra, The Hon'ble Mr. Justice Saroda Charan, M.A., B.L. *Calcutta.*
1905 Dec. 6.	R.	Mohamed Hossain Khan Midhut. *Calcutta.*
1901 Aug. 7.	N.R.	Molony, E., I.C.S. *Cawnpur.*
1895 July 3.	N.R.	Monohan, Francis John, I.C.S. *Shillong.*
1898 May 4.	R.	Mookerjee, R. N. *Calcutta.*
1894 June 6.	N.R.	Muhammad Shibli Nomani, Shams-ul-Ulama Maulavie. *Aligarh.*
1904 Jan. 6.	R.	Mukerjee, Harendra Krishna, M.A. *Calcutta.*
1894 Aug. 30.	R.	Mukerjee, Sib Narayan. *Uttarpara.*
1900 May 2.	R.	Mukerji, P. B., B.SC. *Calcutta.*
1899 Sept. 29.	R.	Mukharji, Jotindra Nath, B.A. *Calcutta.*
1886 May 5.	R.	Mukhopadhyaya, The Hon'ble Mr. Justice Asutosh, M.A., D.L., F.R.A.S., F.R.S.E. *Calcutta.*
1892 Dec. 7.	R.	Mukhopadhyaya, Panchanana. *Calcutta.*
1901 April 3.	R.	Mullick, Pramatha Nath. *Calcutta.*
1885 June 3.	N.R.	Naemwoollah, Maulavie, Deputy Magistrate. *Bijnor.*
1904 Dec. 7.	A.	Nathan, R., I.C.S. *Europe.*
1901 Mar. 6.	N.R.	Nevill, H. R., I.C.S. *Naini Tal.*
1889 Aug. 29.	L.M.	Nimmo, The Hon'ble Mr. John Duncan. *Calcutta.*
1885 Feb. 4.	N.R.	Nyayaratna, Mahāmāhopādhyāya Mahesa Chandra, C.I.E. *Benares.*
1899 Jan. 7.	A.	O'Brien, P. H., I.C.S. *Europe.*
1900 Dec. 5.	N.R.	O'Connor, Captain, W. F., R.A. *Gyantse.*
1905 Nov. 1.	N.R.	O'Mally, L. S. S. *Darjeeling.*
1880 Dec. 1.	A.	Oldham, R. D., A.R.S.M., F.G.S. *Europe.*
1905 May 3.	N.R.	Ollenbach, A. J. *Orissa.*
1887 July 6.	R.	Oung, Moung Hla. *Calcutta.*
1901 Jan. 2.	N.R.	Pande, Pandit Ramavatar, B.A., I.C.S. *Hardoi.*
1880 Aug. 4.	L.M.	Pandia, Pandit Mohanlall Vishnulall, F.T.S., *Muttra.*
1901 Aug. 28.	N.R.	Panton, E. B. H., I.C.S. *Saran.*
1904 Aug. 3.	N.R.	Parasnis, D.B. *Satara.*
1880 Jan. 7.	R.	Pargiter, The Hon. Mr. Justice Frederick Eden, B.A., I.C.S. *Calcutta.*
1901 June 5.	R.	Parsons, W. *Calcutta.*
1899 Aug. 2.	N.R.	Peake, C. W., M.A., Bengal Education Service. *Jalpaiguri.*
1873 Aug. 6.	R.	Pedler, The Hon. Sir Alexander, C.I.E., F.R.S., *Kt.*, Director of Public Instruction, Bengal. *Calcutta.*
1888 June 6.	L.M.	Pennell, Aubray Percival, B.A., Barrister-at-Law. *Rangoon.*

Date of Election.		
1881 Aug. 25.	R.	Percival, Hugh Melvile, M.A., Bengal Education Service. *Calcutta.*
1877 Aug. 1.	N.R.	Peters, Lieut.-Colonel C. T., M.B., I.M.S. *Bombay.*
1889 Nov. 6.	R.	Phillott, Lieut -Col. D. C., 23rd Cavalry F.F., Secretary Board of Examiners. *Calcutta.*
1904 June 1.	R.	Pilgrim, G. Ellcock. *Calcutta.*
1904 Mar. 4.	N.R.	Pim, Arthur W., I.C.S. *Jhansi.*
1889 Mar. 6.	A.	Prain, Lieut.-Col. David, M.A., M.B., LL.D., I.M.S , Superintendent, Royal Botanic Garden, *Europe.*
1889 Mar. 6.	N.R.	Prasad, Hanuman, Raes and Zemindar. *Chunar.*
1880 April 7.	N.R.	Rai, Bipina Chandra, B.L. *Mymensingh.*
1895 Aug. 29.	R.	Rai Chaudhery, Jatindra Nath, M.A., B.L. *Barnagar.*
1901 June 5.	N.R.	Rai, Lala Lajpat. *Lahore.*
1900 April 4.	A.	Raleigh, T. *Europe.*
1898 Aug. 3.	N.R.	Ram, Sita, M.A. *Moradabad.*
1905 Jan. 4.	N.R.	Rankin, J. T., I.C.S. *Dacca.*
1904 Mar. 4.	F.M.	Rapson, E. J. *Europe.*
1890 Mar. 5.	R.	Ray, Prafulla Chandra, D.SC., Bengal Education Service. *Calcutta.*
1887 May 4.	R.	Ray, Prasanna Kumar, D.SC. (Lond. and Edin.), Bengal Education Service. *Calcutta.*
1905 May 3.	N.R.	Richardson, Thomas William, I.C.S. *Bankipur.*
1884 Mar. 5.	R.	Risley, The Hon. Mr. Herbert Hope, B.A., C.I.E., I.C.S. *Calcutta.*
1903 Mar. 4.	N.R.	Rogers, Charles Gilbert, F.L.S., F.C.H., Indian Forest Department. *Port Blair.*
1900 April 4.	R.	Rogers, Major Leonard, M.D., B.SC., M.R.C.P., F.R.C.S., I.M.S. *Calcutta.*
1900 Aug. 29.	A.	Rose. H. A., I.C.S. *Europe.*
1901 Dec. 4.	R.	Ross, E. Denison, PH.D. *Calcutta.*
1889 June 5.	N.R.	Roy, Maharaja Girjanath. *Dinagepur.*
1903 July 1.	R.	Roy, Maharaja Jagadindra Nath, Bahadur. *Calcutta.*
1896 Aug. 27.	A.	Samman, Herbert Frederick, I.C.S. *Europe.*
1905 Mar. 1.	R.	Saniel, S. C. *Calcutta.*
1899 June 7.	N.R.	Sarkar, Chandra Kumar. *Kowkanik.*
1898 Mar. 2.	N.R.	Sarkar, Jadu Nath. *Bankipore.*
1897 Nov. 3.	R.	Saunders, C. *Calcutta.*
1902 Feb. 5.	R.	Schulten, Dr. C. *Calcutta.*
1900 Dec. 5.	N.R.	Schwaiger, Imre George. *Delhi.*
1893 Jan. 11.	L.M.	Scindia, His Highness the Maharaja. *Gwalior.*
1902 Feb. 5.	N.R	Sen, A. C., I.C.S. *Rajshayee.*
1905 Jan 4.	R.	Sen, Sukumar. *Calcutta.*
1901 Aug. 29.	R.	Sen, Upendranath. *Calcutta.*

Date of Election.		
1885 April 1.	R.	Sen, Yadu Nath. *Calcutta.*
1897 Dec. 1.	R.	Seth, Mesrovb ,J. *Calcutta.*
1905 May 3.	N.R	Shah, Kashi Prasad. *Mirzapur.*
1904 Jan. 6.	N. R.	Sharman, Gulab Shankar Dev, F.T.S. *Puchbadra.*
1900 Mar. 7.	R.	Sastri-Samkhyaratna-Vedatirtha, Pandit Yogeśa Chandra. *Calcutta.*
1885 Feb. 4.	R.	Shastri, Mahāmāhopādhāya Haraprasād, M.A. *Calcutta.*
1902 Dec. 3.	N.R.	Shastri, Harnarain. *Delhi.*
1902 Mar. 5.	R.	Shastri, Rajendra Chandra, M.A. *Calcutta.*
1903 April 1.	A.	Shaun, Montague Churchill. *Europe.*
1900 May 2.	R.	Shrager, Adolphe. *Calcutta.*
1899 May 3.	N.R.	Silberrad, Chas. A., I.C.S. *Banda.*
1903 Aug. 26.	N.R.	Simpson, J. Hope, I.C.S. *Allahabad.*
1904 April 6.	R.	Simpson, Maurice George, M.I.E.E. *Calcutta.*
1904 June 1.	R.	Simpson, Robert Rowell, B.SC. *Calcutta.*
1893 Mar. 1.	N.R.	Singh, Maharaja Kumara Sirdar Bharat, I.C.S. *Ghazipur.*
1902 Sep. 24.	R.	Singh, Kumar Birendra Chandra. *Calcutta.*
1895 Aug. 29.	R.	Singh, Lachmi Narayan, M.A., B.L. *Calcutta.*
1892 Mar. 2.	L.M.	Singh, The Hon. Raja Ooday Pratab. *Bingu.*
1889 Aug. 29.	N.R.	Singh, H.H. The Maharaja Prabhu Narain, Bahadur. *Benares.*
1892 Aug. 3.	N.R.	Singh, H.H. The Hon. Maharaja Pratap Narain. *Ajodhya, Oudh.*
1889 Nov. 6.	N.R.	Singh, H.H. The Hon. Maharaja Rameshwara, Bahadur. *Darbhanga.*
1894 Feb. 7.	N.R.	Singh, H.H. Raja Vishwa Nath, Bahadur, Chief of Chhatarpur.
1901 Aug. 7.	R.	Singha, Chandra Narayan. *Calcutta.*
1904 Mar. 4.	N.R.	Singha Kumar Kamlananda. *Srinagar.*
1894 July 4.	N.R.	Sinha, Kunwar Kushal Pal, M.A. *Narki P.O., Agra District.*
1897 Jan. 6.	R.	Sircar, Amrita Lal, F.C.S. *Calcutta.*
1872 Aug. 5.	N.R.	Skrefsrud, The Revd. Laurentius Olavi. *Rampore Haut.*
1905 Mar. 1.	R.	Sorabjee, Cornelia. *Calcutta.*
1901 Dec. 4.	A.	Spooner, D. Brainerd. *Europe.*
1904 Sept. 28.	N.R.	Stapleton, H. E., B.A., B.SC. *Calcutta.*
1898 April 6.	N.R.	Stark, Herbert A., B.A. *Cuttack.*
1901 Mar. 6.	N.R.	Stebbing, E. P. *Dehra Dun.*
1891 Aug. 27.	N.R.	Stein, M. A., PH.D. *Peshawar.*
1904 June 1.	R.	Stephen, The Hon'ble Mr. Justice, H. L. *Calcutta.*
1899 Aug. 30.	R.	Stephen, St. John, B.A., LL.B. Barrister-at-Law. *Calcutta.*
1900 Aug. 29.	F.M.	Stephenson, Captain John, I.M.S. *Europe.*
1904 July 6.	N.R.	Streatfeild, C. A. C., I.C.S. *Bahraich.*
1904 Jan. 6.	N.R.	Stuart, Louis, I.C.S. *Orai.*

Date of Election.		
1868 June 3.	R.	Tagore, Maharaja Sir Jotendra Mohun, Bahadur, K.C.S.I. *Calcutta.*
1898 April 6.	R.	Tagore, Maharaja Coomar Sir Prodyat Coomar, *Kt.* *Calcutta.*
1904 July 6.	N.R.	Talbot, Walter Stanley, I.C.S. *Srinagar. Kashmir.*
1905 July 5.	R.	Tarkabhuṣaṇa, Pramatha Nath. *Calcutta.*
1893 Aug. 31.	N.R.	Tate, G. P. *Quetta.*
1878 June 5.	N.R.	Temple, Colonel Sir Richard Carnac, *Bart.*, C.I.E., I.A. *Port Blair.*
1904 May 4.	N.R.	Thanawala, Framjee Jamasjee. *Bombay.*
1875 June 2.	N.R.	Thibaut, Dr. G., Muir Central College. *Allahabad.*
1898 Nov. 2.	R.	Thornton, Edward, F.R.I.B.A. *Calcutta.*
1847 June 2.	L.M.	Thuillier, Lieut.-Genl. Sir Henry Edward Landor, *Kt.*, C.S.I., F.R.S., R.A. *Europe.*
1891 Aug. 27.	N.R.	Thurston, Edgar. *Madras.*
1904 June 1.	R.	Tipper, George Howlett, F.G.S. *Calcutta.*
1861 June 5.	L.M.	Tremlett, James Dyer, M.A., I.C.S. (retired). *Europe.*
1905 Jan. 4.	N.R.	Turner, Frank. *Dacca.*
1905 Aug. 2.	N.R.	Urwin, Captain J. J., M.B., I.M.S. *Calcutta.*
1905 July 7.	N.R.	Vaidya, Jain. *Jaipur.*
1893 May 3.	N.R.	Vanja. Raja Ram Chandra. *Mayurbhanja. District Balasore.*
1898 Feb. 2.	R.	Vasu, Amrita Lal. *Calcutta.*
1900 Aug. 29.	A.	Vaughan, Major J. C., I.M.S., *Europe.*
1890 Feb. 5.	N.R.	Venis, Arthur, M.A., Principal, Sanskrit College. *Benares.*
1902 May 7.	R.	Vidyabhusana, Jogendra Nath Sen. *Calcutta.*
1905 July 5.	R.	Vidyabhusana, Rajendranath. *Calcutta.*
1902 June 4.	R.	Vidyabhusana, Mahamahopadhyay Satis Chandra, M.A. *Calcutta.*
1901 Mar. 6.	N.R.	Vogel, J. Ph., PH.D. *Lahore.*
1894 Sept. 27.	L.M.	Vost, Major William, I.M.S. *Europe.*
1902 Oct. 29.	R.	Vredenburg, E. *Calcutta.*
1901 Aug. 7.	A.	Walker, Dr. T. L. *Europe.*
1900 Jan. 19.	R.	Wallace, David Robb. *Calcutta.*
1901 June 5.	R.	Walsh, E. H., I.C.S. *Chinsura.*
1889 Nov. 6.	A.	Walsh, Lieut-Col. John Henry Tull, I.M.S. *Europe.*
1900 April 4.	N.R.	Walton, Captain Herbert James, M.B., F.R.C.S., I.M.S. *Bombay.*
1865 May 3.	A.	Waterhouse, Major-General James. *Europe.*
1905 Dec. 6.	R.	Watson, Edwin Roy, B.A. *Calcutta.*
1874 July 1.	A.	Watt, Sir George, *Kt.*, C.I.E. *Europe.*

Date of Election		
1902 April 2.	A.	Wheeler, H., I.C.S. *Europe.*
1905 Dec. 6.	R.	Wilson, James, C.S.I., I.C.S. *Calcutta.*
1904 Mar. 4.	R.	Wood, William Henry Arden, M.A., F.C.S., F.R.G.S. *Calcutta.*
1900 Dec. 5.	R.	Woodman, H. C., I.C.S. *Calcutta.*
1894 Aug. 30.	N.R.	Wright, Henry Nelson, B.A., I.C.S. *Unao.*
1898 July 6.	R.	Wyness, James, C.E. *Calcutta.*
1905 Mar. 1.	R.	Young, Rev. A. Willifer. *Calcutta.*

SPECIAL HONORARY CENTENARY MEMBERS.

Date of Election.	
1884 Jan. 15.	Dr. Ernst Hæckel, Professor in the University of Jena.
1884 Jan. 15.	Charles Meldrum, Esq., C.M.G., M.A., LL.D., F.R.A.S., F.R.S. *Mauritius.*
1884 Jan. 15.	Professor A. H. Sayce, Professor of Comp. Philology. *Oxford.*
1884 Jan. 15.	Professor Emile Senart, Member of the Institute of France. *Paris.*

HONORARY MEMBERS.

Date of Election.	
1848 Feb. 2.	Sir Joseph Dalton Hooker, G.C.S.I., C.B., M.D., D.C.L., LL.D., F.L.S., F.G.S., F.R.G.S., F.R.S. *Berkshire.*
1879 June 4.	Dr. Albert Günther, M.A., M.D., PH.D., F.Z.S., F.R.S. *Surrey.*
1879 June 4.	Dr. Jules Janssen. *Paris.*
1879 June 4.	Professor P. Regnaud. *Lyons.*
1881 Dec. 7.	Lord Kelvin, G.C.V.O., D.C.L., LL.D., F.R.S.E., F.R.S. *Glasgow.*
1883 Feb. 7.	Alfred Russell Wallace, Esq., LL.D., D.C.L., F.L.S., F.Z.S., F.R.S. *Dorset.*
1894 Mar. 7.	Mahāmāhāpadhyāya Chandra Kanta Tarkalankara. *Calcutta.*
1894 Mar. 7.	Professor Theodor Noeldeke. *Strassburg.*
1895 June 5.	Lord Rayleigh, M.A., D.C.L., D.SC., LL.D., PH.D., F.R.A.S., F.R.S. *Witham, Essex.*
1895 June 5.	Lt.-Genl. Sir Richard Strachey, R.E., G.C.S.I., LL.D., F.R.G.S., F.G.S., F.L.S., F.R.S. *London.*
1895 June 5.	Charles H. Tawney, Esq., M.A., C.I.E. *London.*
1896 Feb. 5.	Lord Lister, F.R.C.S., D.C.L., M.D., LL.D., D.SC., F.R.S. *London.*

Date of Election.	
1896 Feb. 5.	Sir Michael Foster, K.C.B., M.A., M.D., D.C.L., LL.D., D.SC., F.L.S., F.R.S. *Cambridge.*
1896 Feb. 5.	Professor F. Kielhorn, PH.D., C.I.E. *Göttingen.*
1896 Feb. 5.	Professor Charles Rockwell Lanman. *Massachusetts, U.S.A.*
1899 Feb. 1.	Dr. Augustus Frederick Rudolf Hœrnle, PH.D., C.I.E. *Oxford.*
1899 Dec. 6.	Professor Edwin Ray Lankester, M.A., LL.D., F.R.S. *London.*
1899 Dec. 6.	Sir George King, K.C.I.E., M.B., LL.D., F.L.S., F.R.S. *London.*
1899 Dec. 6.	Professor Edward Burnett Tylor, D.C.L., LL.D., F.R.S. *Oxford.*
1899 Dec. 6.	Professor Edward Suess, PH.D., For. Mem. R.S. *Vienna.*
1901 Mar. 6.	Professor J. W. Judd, C.B., LL.D., F.R.S. *London.*
1902 Nov. 5.	Monsieur R. Zeiller. *Paris.*
1904 Mar. 2.	Professor Heinrich Kern. *Leiden.*
1904 Mar. 2.	Professor Ramkrishna Gopal Bhandarkar, C.I.E. *Poona.*
1904 Mar. 2.	Professor M. J. DeGoeje. *Leiden.*
1904 Mar. 2.	Professor Ignaz Goldziher. Budapest.
1904 Mar. 2.	Sir Charles Lyall, M.A., K.C.S.I. *London.*
1904 Mar. 2.	Sir William Ramsay, PH.D., (Tüb.) LL.D., SC.D. (Dubl.) F.C.S., F.I.C.
1904 July 2.	Dr. George Abraham Grierson, PH.D., C.I.E., I.C.S. *London.*

ASSOCIATE MEMBERS.

Date of Election.	
1874 April 1.	The Revd. E. Lafont, C.I.E., S.J. *Calcutta.*
1875 Dec. 1.	The Revd. J. D. Bate, M.R.A.S. *Kent.*
1875 Dec. 1.	Maulavie Abdul Hai. *Calcutta.*
1882 June 7.	Herbert, Giles, Esq. *Europe.*
1884 Aug. 6.	F. Moore, Esq., F.L.S. *Surrey.*
1885 Dec. 2.	Dr. A. Führer, *Europe.*
1886 Dec. 1.	Rai Bahadur Sarat Chandra Das, C.I.E. *Calcutta.*
1892 April 6.	Pandit Satya Vrata Samasrami. *Calcutta.*
1892 Dec. 7.	Professor P. J. Brühl. *Sibpur.*
1899 April 5.	Rai Bahadur Ram Brahma Sanyal. *Calcutta.*
1899 April 5.	Pandit Visnu Prasad Raj Bhandari. *Nepal.*
1899 Nov. 1.	The Revd. E. Francotte, S.J. *Calcutta.*
1902 June 4.	The Revd. A. H. Francke. *Leh.*

LIST OF MEMBERS WHO HAVE BEEN ABSENT FROM INDIA THREE YEARS AND UPWARDS.*

* *Rule* 40.—After the lapse of three years from the date of a member leaving India, if no intimation of his wishes shall in the interval have been received by the Society, his name shall be removed from the List of Members.

The following members will be removed from the next Member List of the Society under the operation of the above Rule:—

Womes Chunder Bonnerjee, Esq., Barrister-at-Law.
Frank Finn, Esq., B.A., F.Z.S.
Dr. T. L. Walker.
Major-General James Waterhouse.

LOSS OF MEMBERS DURING 1904.

By Retirement.

Edward Charles Stewart Baker, Esq.
J. Bathgate, Esq.
Major A. H. Bingley, I.A.
Major E. Harold Brown, M.D., I.M.S.
Dr. Arnold Caddy.
Francis Joseph Ede, Esq., C.E., A.M.I.C.E., F.G.S.
Captain Stuart Godfrey, I.A.
R. O. Lees, Esq.
Charles Richardson Marriott, Esq., I.C.S.
William Stevenson Meyer, Esq., I.C.S.
Rai Lukshmi Sanker Misra, Bahadur.
L. F. Morshead, Esq., I.C.S.
John Nicoll. Esq.
Dr. Frederic H. Norvill.
Birendra Chandra Sen, Esq., I.C.S.
A. Tocher, Esq.
The Hon. Mr. Justice John George Woodroffe.
Lieut.-Col. H. F. S. Ramsden, I.A.

By Death.

Ordinary Members.

Dr. William Thomas Blanford, LL.D., F.R.S. (Life Member.)
Raja Jaykrishna Das, Bahadur.
H. W. Peal, Esq., F.E.S.

Honorary Member.

Dr. William Thomas Blanford, LL.D., F.R.S.

BY REMOVAL.

Under Rule 9.

J. deGrey Downing, Esq.
Pandit Navakanta Kavibhusana.

Under Rule 38.

Robert Greenhill Black, Esq.
Babu Jaladhi Chundra Mukerjee.
Babu Ramani Mohon Mullick.

Under Rule 40.

Edwin Max Konstam, Esq.
Michael Francis O'Dwyer, Esq., B.A., I.C.S.
Alfred Fredrick Steinberg, Esq., I.C.S.

[APPENDIX.]

ABSTRACT STATEMENTS

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1905.

STATEMENT

1905. *Asiatic Society*

Dr.

To Establishment.

				Rs.	As.	P.	Rs.	As.	P.
Salaries ...	...	...	...	3,810	12	6			
Commission	...	...	...	456	12	6			
Pension ...	...	...	...	204	0	0			
							4,471	9	0

To Contingencies.

Stationery ...	...	...	...	67	3	6			
Taxes ...	...	...	...	884	4	0			
Postage ...	...	...	...	538	13	0			
Freight ...	...	...	...	160	0	6			
Meeting ...	...	...	...	122	14	9			
Auditor's fee	...	...	...	100	0	0			
Electric Fans and Lights	..	...		228	5	0			
Insurance fee	....	...	...	312	8	0			
Petty repairs	...	...	...	26	6	6			
Building ...	...	...	...	1,265	0	0			
Miscellaneous	...	...	...	528	12	0			
							4,234	3	3

To Library and Collections.

Books ...	...	...	...	2,232	9	4			
Binding ...	...	...	...	1,207	10	0			
Catalogue ...	...	...	...	177	0	0			
Picture Frame, including other expenditure ...				3,313	2	6			
Furniture ...	...	...	...	319	11	6			
							7,250	1	4

To Publications.

Journal, Part I.	...	...	...	1,791	13	0			
Do. „ II.	...	...	...	1,549	1	6			
Do. „ III.	...	...	...	590	10	3			
Proceedings	...	...	...	422	10	0			
Journal, Proceedings, and Memoirs			...	1,377	14	6			
							5,732	1	3
To printing charges of Circulars, Receipt Forms, &c.	...	..	...	...			286	11	9
„ Personal Account (Writes off and miscellaneous)	...	...	...	...			... 765	8	9

To Extraordinary Expenditure.

Royal Society's Scientific Catalogue			...	...	1,597	15	0		
Balance			...	...	1,93,143	1	9		
Total Rs.					2.17,481	4	1		

No. 1.
of Bengal. *1905.*

Cr.

					Rs.	As.	P.
By Balance from last report					1,92,939	7	5
By Cash Receipts.							
Publications sold for cash				933	4	11	
Interest on Investments				6,891	8	0	
Rent of room on the Society's ground floor ...				550	0	0	
Allowance from Government of Bengal for the Publication of Anthropological and Cognate subjects				2,000	0	0	
Allowance from Government of Eastern Bengal and Assam				1,000	0	0	
Miscellaneous				422	4	0	
					11,797	10	0
By Extraordinary Receipts.							
Subscriptions to Royal Society's Scientific Catalogue					1,481	5	1
By Personal Account.							
Admission fees				1,200	0	0	
Subscriptions				9,240	0	0	
Sales on credit				809	12	0	
Miscellaneous				13	10	9	
					11,263	6	9
Total Rs. ...					2,17,481	4	1

Asutosh Mukhopadhyay,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1905. Oriental Publication Fund in Acct.

Dr.

To Cash Expenditure.

			Rs.	As.	P.	Rs.	As.	P.
Salaries			1,654	5	3			
Commission on collections			52	10	9			
Editing charges			6,149	8	0			
Postage			318	13	0			
Freight			32	5	0			
Printing charges			7,081	2	0			
Stationery			28	0	6			
Contingencies			419	3	9			
						15,736	0	3
To Personal Account (Writes off and Miscellaneous)						44	14	0
	Balance	... ...				3,174	9	9
	Total Rs.	...				18,955	8	0

STATEMENT

1905. Sanskrit Manuscript Fund in Acct.

Dr.

To Cash Expenditure.

			Rs.	As.	P.	Rs.	As.	P.
Salaries			1,184	0	0			
Travelling charges			320	15	0			
Printing			2,045	12	0			
Postage			103	11	0			
Contingencies			12	8	0			
Purchase of Manuscripts			5,000	0	0			
						8,666	14	0
	Balance	... ...				3,120	2	5
	Total Rs.	...				11,787	0	5

No. 2.

with the Asiatic Society of Bengal. 1905.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report					5,097	1	3
By Cash Receipts.							
Government Allowance		9,000	0	0			
Publications sold for cash ...		822	9	9			
Advances recovered		90	14	0			
Loan from Asiatic Society of Bengal ...		2,000	0	0			
					11,913	7	9
By Personal Account.							
Sales on credit					1,944	15	0
Total Rs. ...					18,955	8	0

ASUTOSH MUKHOPADHYAY,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 3.

with the Asiatic Society of Bengal. 1905.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report					3,578	0	5
By Cash Receipts.							
Government Allowance		3,200	0	0			
Do. Do. special		5,000	0	0			
Publications sold for cash		5	0	0			
					8,205	0	0
By Personal Account.							
Sales on credit					4	0	0
Total Rs. ...					11,787	0	5

ASUTOSH MUKHOPADHYAY,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1905. Arabic and Persian MSS. Fund in

Dr.

To Cash Expenditure.

				Rs.	As.	P.	Rs.	As.	P.
Salaries	...	...	...	1,885	1	0			
Purchase of Manuscripts	...	...	...	6,258	4	0			
Stationery ...	...	...	...	17	14	6			
Contingencies ...	...	...	...	64	15	9			
Postage	...	...	...	13	12	6			
Travelling charges ...	...	...	...	666	9	0			
							8,906	8	9
	Balance	...	...				4,459	0	0
		Total Rs.	...				13,365	8	9

STATEMENT

1905. Bardic Chronicles MSS. Fund in

Dr.

				Rs.	As.	P.	Rs.	As.	P.
To Balance	...	...	...	...			2,400	0	0
		Total Rs.	...				2,400	0	0

No. 4.

Acct. with the Asiatic Soc. of Bengal. 1905.

Cr.

		Rs.	As.	P.	Rs.	As.	P.
By Balance from last Report					6,365	8	9
By Cash Receipts.							
Government Allowance					7,000	0	0
Total Rs. ...					13,365	8	6

Asutosh Mukhopadhyay,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 5.

Acct. with the Asiatic Soc. of Bengal. 1905.

Cr.

By Cash Receipts.

		Rs.	As.	P.	Rs.	As.	P.
Government Allowance					2,400	0	0
Total Rs. ...					2,400	0	0

... Asutosh Mukhopadhyay,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1905. *Personal*

Dr.

		Rs. As. P.	Rs. As. P.
To Balance from last Report			4,963 0 10
To Cash Expenditure.			
Advances for purchase of Manuscripts, &c. ...			5,551 8 9
To Asiatic Society		11,263 6 9	
,, Oriental Publication Fund		1,944 15 0	
,, Sanskrit Manuscript Fund		4 0 0	
			13,212 5 9
Total Rs. ...			23,726 15 4

No. 6.

Account. *1905.*

Cr.

				Rs.	As.	P.	Rs.	As.	P.
By Cash Receipts	...	...	...	...			13,783	14	9
„ Asiatic Society	...	...	...	765	8	9			
„ Oriental Publication Fund		...	...	44	14	0			
							810	6	9

By Balance.	Due to the Society.			Due by the Society.					
	Rs.	As.	P.	Rs.	As	P.			
Members ...	7,153	7	9	202	5	5			
Subscribers ...	19	8	0	...	...	...			
Employès ...	30	0	0	100	0	0			
Oriental Publication Fund	2,000	0	0	...	...	...			
Miscellaneous	416	12	6	184	13	...			
	9,619	12	3	487	2	5			
						...	9,132	9	10

Total Rs.	...	23,726	15	4

Asutosh Mukhopadhyay,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1905. *Invest-*

Dr.

	Value.			Cost.		
	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Report	1,98,300	0	0	1,97,958	3	2
,, Cash	...			6	3	6
TOTAL Rs. ...	1,98,300	0	0	1,97,964	6	8

FUNDS.	PERMANENT.						TEMPORARY						Total Cost.		
	Value.			Cost.			Value.			Cost.					
	Rs.	A	P.	Rs.	A.	P.	Rs.	A	P	Rs.	A.	P.	Rs.	A.	P.
Asiatic Society ...	1,49,800	0	0	1,49,343	6	8	45,100	0	0	45,293	6	5	1,94,636	13	1
Trust Fund ...	1,400	0	0	1,339	6	0	...	...	...	...	..	..	1,339	6	0
	1,51,200	0	0	1,50,681	12	8	45,100	0	0	45,293	6	5	1,95,976	3	1

STATEMENT

1905. *Trust*

Dr.

	Rs.	As.	P.
To Pension	48	0	0
Balance	1,456	11	10
TOTAL Rs. ...	1,504	11	10

No. 7.

ment. *1905.*

Cr.

		Value.			Cost.		
		Rs.	As.	P.	Rs.	As.	P.
By Cash		2,000	0	0	1,988	3	7
,, Balance		1,96,300	0	0	1,95,976	3	1
TOTAL Rs. ...		1,98,300	0	0	1,97,964	6	8

ASUTOSH MUKHOPADHYAY,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 8.

Fund. *1905.*

Cr.

	Rs.	As.	P.
By Balance from last Report	1,455	11	10
,, Interest on Investment	49	0	0
TOTAL Rs. ...	1,504	11	10

ASUTOSH MUKHOPADHYAY,
Honorary Treasurer,
Asiatic Society of Bengal.

STATEMENT

1905. *Cash*

Dr.

		Rs.	As.	P.
To Balance from last Report		6,514	9	8

RECEIPTS.

To Asiatic Society	13,278	5	11
,, Oriential Publication Fund	11,913	7	9
,, Sanskrit Manuscript Fund	8,205	0	0
,, Arabic and Persian Manuscript Fund ...	7,000	0	0
,, Bardic Chronicles Manuscript Fund ...	2,400	0	0
,, Personal Account	13,783	14	9
,, Investment	1,988	3	7
,, Trust Fund	49	0	0
		58,618	0	0
TOTAL Rs.		65,132	9	8

STATEMENT

1905. *Balance*

Dr.

	Rs.	As.	P.	Rs.	As.	P.
To Cash	2,644	12	10			
,, Personal Account	9,132	9	10			
,, Investment	1,95,976	3	1			
				2,07,753	9	9
Government Pro. Note at Bank of Bengal's Safe Custody Account Cashier's Security Deposit Rs. 500				...		
TOTAL Rs. ...				2,07,753	9	9

We have examined the above Balance Sheet and the appended detailed Accounts with the Books and vouchers presented to us, and certify that it is in accordance therewith, correctly setting forth the position of the Society as at the 31st December, 1905.

CALCUTTA,
15th February, 1906.

MEUGENS, KING AND SIMSON,
Chartered Accountants.

No 9.

Account. *1905.*

Cr.

EXPENDITURE.

				Rs.	As.	P.	Rs.	As.	P.
By Asiatic Society ...	...	...	...	23,572	9	7			
„ Oriental Publication Fund	...	...		15,736	0	3			
„ Sanskrit Manuscript Fund	...	...		8,666	14	0			
„ Arabic and Persian Manuscript Fund		...		8,906	8	9			
„ Personal Account ...	...	...	...	5,551	8	9			
„ Investment ...	...	...	...	6	3	6			
„ Trust Fund ...	...	...	...	48	0	0			
							62,487	12	10
Balance ...	...						2,644	12	10
TOTAL Rs. ...							65,132	9	8

ASUTOSH MUKHOPADHYAY,
Honorary Treasurer,
Asiatic Society of Bengal.

No. 10.

Sheet. *1905.*

Cr.

				Rs.	As.	P.	Rs.	As.	P.
By Asiatic Society ...	...	...	...	1,93,143	1	9			
„ Oriental Publication Fund	...	...		3,174	9	9			
„ Sanskrit Manuscript Fund	...	...		3,120	2	5			
„ Arabic and Persian Manuscript Fund		...		4,459	0	0			
„ Bardic Chronicles Manuscript Fund		...		2,400	0	0			
„ Trust Fund ...	...	...	...	1,456	11	10			
							2,07,753	9	9
TOTAL Rs. ...							2,07,753	9	9

ASUTOSH MUKHOPADHYAY,
Honorary Treasurer,
Asiatic Society of Bengal.

4. *Supplementary Notes on the Bengal poet Dhoyīka and on the Sena Kings.*—*By* Monmohan Chakravarti, M.A., B.L., M.R.A.S.

I. Dhoyīka.

Pavana-dūtaṁ known to the anthologist Śrīdhara-dāsa.

The *Pavanadūtaṁ* was certainly known to Śrīdhara-dāsa, as he quotes its verse 104 and the first half of its verse 101 in his anthology, the *Sūkti-karṇ-āmṛta*, under the name Dhoyīka. The verse 104, as quoted in the MSS.,[1] nearly agrees with the printed text (J.A.S.B. 1905, p. 68), the only variants being **चोणि** for **चौणि** in line 1, **शैलोप** for **शैवोप** in line 3, and **प्रवणमनसा** for **प्रयतमनसा** in line 4. In the verse 101, the second half differs, but why it is not clear. It runs in the anthology as follows:—

दन्तिव्यूहं कनककलितं चामरं हेमदण्डं
यो गौड़ेन्द्रादलभत कविक्ष्माभृताञ्चक्रवर्त्ती ।
ख्यातोयञ्च श्रुतिधरतया विक्रमादित्य गोष्ठी
विद्याभर्त्तुः खलु वरुचेराससाद प्रतीष्ठां॥ धोयीकस्य ॥ fol. 182b.
उच्चावचप्रवाहः, कविदानवीचिः, द्वितीयश्लोकः, v. 29. 2.

The *Pavanadūtaṁ* must, therefore, be earlier than Śaka 1127 Phālguna, or 1206 A.D., in which year this anthology was completed.

Additional verses of the poet.

Very little is known about the works of Dhoyīka. So I give in the appendix 18 more verses quoted in the *Sūkti-karṇ-āmṛta*, one quoted in Jalhana's *Subhāṣita-muktāvalī*,[1] and one quoted in the *Śārṅgadhara-paddhati*, in all 20 verses.

Jayadeva in his 4th verse calls *Dhoyī kavi-kṣmā-patiḥ* as *Śrutidharaḥ*, or one having good memory. According to the commentators, this means that he was not original, probably alluding to his fondness for imitation as shown, *e.g.*, in the *Pavanadūtaṁ*. The epithet *Śrutidhara* is, however, used in the verse of Dhoyīka quoted above.

II. The Sena Kings.

More dates in La. Sa. era.

Further materials for the ascertainment of the Lakṣmaṇasena Saṁvat are to be found in the "Notices of Sanskrit MSS." in the Durbar Library, Nepal, edited by our Philological Secretary, Mahamahopadhyāya Paṇḍit Haraprasad Śāstri, which has just

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[1] *Uccāvaca-pravāhaḥ, vṛtārdha-śānta-vīciḥ*, 5th verse (v. 61.5), fol. 195*b*

[2] Dr. Bhaṇḍarkar's Report on the Search for Sanskrit MSS., 1897, p. xxvi

come to my hands. Some 57 MSS. contain colophons dated in La. Sa. ranging from the year 91 (in the MS. No. 400, p. 15) to the year 558 (in No. 1076–73, p. 41). In most the dates are in figures, with the abbreviated symbols La. Sa. In only four MSS. words like the following have been used :—**अब्दे लक्ष्मणसेनभूपति मते** (MS. 787 **ख**, p. 22), **लक्ष्मणाब्दे** (MS. 1577 **ङ**, p. 33), **गतलक्ष्मणसेनदेवीय** (MS. 1113 **ङ**, p. 35), and **लक्ष्मणसेनवर्षे** (MS. 13616, p. 51). The words **गत** 'expired,' and **मते** are significant.

Unfortunately, most of the dates given do not mention the tithis and the weekdays together, and are hence not verifiable. Of the few which do, in the following, the tithis come out correctly with the weekdays, if the La. Sa. be taken to have begun in A.D. 1119–20 (Çaka 1041–2) :—

(i) The *Mahābhārata, śānti-parvva*, Maithili characters (MS. No. 867, p. 25).
La. Sa. 412 *Kārttika-śukla-saṣṭhyāṁ gurau dine* = Thursday, the 27th October, A.D. 1530 (the La. Sa. year being current).

(ii) The *Bhāgavata-daśama-skandha-ṭīkā* of Çrīdhara-svāmī (MS. No. 934, p. 28), Maithili character.
La. Sa. 472 *Kārttika śudi* 3 *ravau dine* = Sunday, the 15th of October, A.D. 1591.

(iii) The *Tātparyya-pariśuddhiḥ* of Udayana, in Maithili character (MS. No. 1076 **ञ**, p. 31).
La. Sa. 339, *Bhādru śudi saṣṭhyāṁ kuje* = Tuesday, the 15th of August, A.D. 1458.

(iv) The *Kārttika-māhātmyaṁ*, in Bengali character (MS. No. 1077 **ङ**, p. 32).
La. Sa. 447, *Srāvaṇa vadi* 5, *candra-vāsare* = Monday, the 5th of August, A.D. 1566 (the La. Sa. year being current).

(v) The *Devī-māhātmya-ṭīkā*, in Bengali character (MS. No. 1361 **ढ**, p. 51).
Netr-ābdhi-rāma-yuta-Laksmaṇasena-varṣe Bhādre kuje Haripure Hari-vāsare drāk or *La. Sa.* 372, *Bhādra śu* 12, *kuje* = Tuesday, the 15th of August, A.D. 1491 (the year being current).

(vi) The *Devī-māhātmyam*, in Maithili character (MS. No. 1534 **ग**, p. 613).
La. Su. 392, *Pauṣa vadi* 3, *budhe* = Wednesday, the 18th of December, A.D. 1510 (the year current, already calculated by Professor Kielhorn, see note 4 to p. 19, Professor Bendall's Introduction).

(vii) The *Sūryya-siddhānta-bhāṣyaṁ* of Caṇḍeśvara, in Maithili character (MS. No. 1165, p. 133).
La. Sa 392, *Phālguṇa śudi* 7, *candre* = Monday, the 23rd of February, A.D. 1511.

(viii) The *Bhāgavata, dasama-skandha*, Maithili character (MS. No. 358, p. 13).
La. Sa. 397, *Sakābdāḥ* 1399.

The only colophon giving the La. Sa. with another era. They do not agree on the basis of Śaka 1041-2. It is possible that the figures have been wrongly read or copied. Then Śaka 1399 = La. Sa. 357, if the date fell in the months *Caitra-Āśvina*.

These La. Sa. dates in the "Notices" thus support the conclusion that the Lakṣmaṇasena Saṁvat was an expired year (though the current was often used), beginning in Śaka 1041-42, or A.D. 1119-20; and if there is any significance in the word *Mate*, that it was adopted by the king Lakṣmaṇasena.

The genitive does not necessarily signify regnal year.

An old example.

The use of genitive in the king's name, though the year was of an era, I have traced to an old period. In the Taxila plate of Patika, the inscription begins :—

[*Saṁvatsa*] *raye aṭhasatatimae* 20 20 20 10 4 4 *Maharayasa Mahaṁtasa* [*Mo*] *gasa*, (p. 75);

About which Bühler remarked :—"The year 78 is, of course, not that of the reign of Moga, but of the era which he used." (*Ep. Ind.* IV., p. 76).

From this analogy it does not seem improbable that the Lakṣmaṇasena Saṁvat may be the era of the founder of the Sena dynasty, though passing in the name of Lakṣmanasena.

In the *Sūkti-karṇ-āmṛta* six verses are quoted under the name *Śrīmat-Keśavasenadeva*, and one verse under *Puruṣottama-pādānāṁ*, along with one verse under *Śrī-Ballālasenadeva-pādānāṁ*, and eleven verses under the name *Śrīmal-Lakṣmaṇasenadeva* (or simply *Śrī-L.* or *Śrī-L.-sena* without *Deva*).[1] Were, therefore, a prince by name Keśavasenadeva in the Sena dynasty, and another prince named Puruṣottama? *Pādānāṁ* may mean a prince in the ancestral line, probably deceased Prinsep read in the Bākarganj plate the name Keśavasena, as a son of Lakṣmaṇasena, though this is now said to be a misreading of Viśvarūpasena. In its traditionary list of Bengal kings, the Ain-i-Akbari mentions one Kesú Sen, the second remove from Lachman Sen (Translation, II. 146).

Was there a Sena prince named Keśavasena?

It is clear that from Vijaysena's time downwards, the tracts of Gauḍa, Vaṅga, Suhma, and probably Rāḍha, came to be under the sway of the Sena kings. An inscription of Vijayasena

The extent of the Sena Kingdom.

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[1] In the *Śārṅgadhara-Paddhati*, one verse (No. 763) is quoted under Ballālasena and one verse (No. 923) under Lakṣmaṇasena. In Jibānanda Vidyāsāgar's anthology, *Kāvya-saṁgraha*, under the heading *Padya-saṁgrahaḥ*, four verses are cited, two being questions of Lakṣmaṇasena and the other two the reply of his father Ballālasena.

In the *Adbhuta-sāgara* under the heading *Sapt-arṣīṇām-adbhutāni* I find the following important passage :—*Bhuja-vasu-daśa* 1081 *mita śake śrīmad-Ballālasena-rājy-ādau-varṣ-eka-ṣaṣṭhi-munir-vinihito = viśeṣāyāṁ* (India Govt MS., fol. 52a. Was then śaka 1081 (A.D. 1159-60) the first year of Ballālasena's reign? The same MS. (fol. 28b) also refers to "1090 *śaka*" under the heading *Bṛhaspater-adbhut-āvartaḥ*.—M.M.C. 12-3-1906.

was found at Deopara, which is in Godagiri Thana, District Rājsāhi. This is in the Vārendra tract, of which Gauḍa was the capital. In the *Dāna-sāgara* and the *Adbhuta-sāgara*, Ballālasena has been described as the king of Gauḍa. Similarly Lakṣmaṇasena has been described in the *Pavanadūtam* as the king of Gauḍa. In the same poem his capital *Vijayapuri*, identifiable with Nudiah, is located in Suhma. It was to Vaṅga Lakṣmaṇasena retired on the sack of Nudiah by Musalmans; and there his descendants were ruling in the time of Minhaj-as-Sirāj. It is not unlikely that the Rāḍha, which lay so close to Nudiah, would have fallen under the sway of the Sena kings. Consequently in the time of Ballālasena and Lakṣmaṇasena the greater part of modern Bengal had fallen under one overlordship; and from the wide prevalence of the Lakṣmaṇasena Saṁvat in Mithilā, one may as well ask if Tirhut did not acknowledge his sovereignty.

Sanskrit literature flourished in the Sena rule.

Both Ballālasena and Lakṣmaṇasena liberally encouraged Sanskrit learning. A number of reputed Sanskrit poets and writers flourished during their reigns, one of whom, Jayadeva, attained an Indian reputation. The reign of Lakṣmaṇasena may not inaptly be called the 'Augustan' period of Sanskrit learning in Bengal. This subject is interesting enough, to be reserved for another article.

APPENDIX.

Additional verses of Dhoyīka.

(*a*) *Sūkti-karṇ-āmṛta.*

(i) दरपरिणत दूर्व्वा दुर्व्वलामङ्कलेखां
ग्लपयति न यदस्याः श्वासजन्मा हुताग्नः ।
स खलु सुभग मन्ये लोचनद्वन्द्वारा
मविरतपटुधारावाहिनीनां प्रभावः ॥ fol. 57*b*.[1]
मुहङ्कारप्रवाहः, प्रियसम्बोधनवीचिः, पञ्चमश्लोकः or II. 30. 5.

(ii) आरब्धा मकरध्वजस्य धनुषे तस्यास्तनुर्व्वेधसा
त्वद्विश्लेषविशेषदुर्व्वलतया जाता[2]लताबद्धनुः ।
तत्संप्रत्यपि वे प्रसीद किमपि प्रेमामृतस्यन्दिनीं

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[1] The reading is from a MS. of the Asiatic Society of Bengal (A) checked by a MS. of the Sanskrit College (S) and a MS of the Serampore College (Sr.). The folio pagings are from the MS. A.

[2] जरता, A.

दृष्टिं नाथ विधेहि सा रतिपतेः शिक्षापि सञ्जायतां ॥ fol. 59*a*.
धूङ्कारप्रवाहः, तनुताख्यानवीचिः, द्वितीयश्लोकः, II. 34. 2.

(iii) तस्याश्चेदेकमनसः स्मरबाणवर्षैः
कार्श्यं वपुः पुष्णति विभर्त्ति यथा यथैव ।
स्तोकायित श्रेयतयैव तथा तथैव
कान्तिर्घनीभवति दीर्घ विलोचनायाः ॥ fol. 59*a*.
ib., *ib.*, द्वतीयश्लोकः, II. 34. 3.

(iv) न क्रीड़ा गिरिकन्दरीषु रमते नोपैति वातायनं
दूरात्द्वेष्टिगुरुं निरस्यति लतागारे विहारस्पृहां ।
आस्ते सुन्दर सा सखी प्रियगिरामाश्वासनैः केवलं
प्रत्याशां दधती तया च हृदयं तेनापि च त्वां पुनः ॥ fol. 59*b*.
ib., उद्वेगकथनवीचिः, चतुर्थश्लोकः, II. 35. 4.

(v) संरुद्धाः कथमप्यमङ्गलभयात् पक्ष्मान्तरव्यापिनो
प्यत्तालीढतलोचनं निपुणया वास्याम्भसां विन्दवः ।
न्यस्यन्त्याः सहकारपल्लवमथ [1]व्यालम्ब्य पत्युः पुरो
धारावाहिभिरेव लोचनजलैर्यात्राघटः पूरितः ॥ fol. 66*b*.
ib., प्रवसद्भर्तृकावीचिः, द्वितीयश्लोकः, II. 51. 2.

(vi) आजन्मव्यवसायिना क्रतुशतैराराध्य पुष्पायुधं
केनाकारिपुरातनूदरितनुत्यागः प्रयागभ्रमे[2] ।
यस्यार्थे सखि लोलनेत्रनलिनी नालायमानस्खल-
द्वास्पाम्भः पतनान्तरालवलितग्रीवं पथः पश्यसि ॥ fol. 70*b*.
ib., वर्त्मावलोकनौवीचिः, चतुर्थश्लोकः, II. 58. 4.

(vii) यत् पु(ष्णा[3])सि पिकान् करेण रिपूनध्वन्य वाम भ्रुवां
यच्छाच्छिद्य वलिं विलुम्पसि करात् सर्व्वं सहिष्ये तव ।
हंहो माद्दचनादितस्त्वयि गते शाखान्तरं वायस
[4]ह्येमेणाद्य समागमिष्यति स चेत् कान्ताश्चिर[5]प्रोषितः ॥ fol. 70*b*.
ib., काकवीचिः, चतुर्थश्लोकः, II. 59. 4.

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[1] व्यानम्य, S. [2] द्रमे, Sr. [3] ष्या, Sr. ष्या, S
[4] क्षेपे, Sr. [5] श्चिरं, Sr.

(viii) प्रयासि यत् कुण्डलचक्रधारया
विपाटयन्तीव घनं निशातमः ।
तदद्य कर्णायत[1]लोचनोत्पले
फलेग्रहिः कस्य मनोरथद्रुमः ॥ fol. 72*b*.
ib., तिमिराभिसारिकावीचिः, चतुर्थश्लोकः, II. 64. 4

(ix) रोमावली स त्रिवली[2] (त*)रङ्ग
गाभी हृदस्योपरिराजते ऽस्याः ।
मुखेन्दुभीतस्तनचक्रवाक
वक्रच्युता शैवलमञ्जरीव ॥ fol. 77*a*.
ib., रोमावलीवीचिः, द्वितीयश्लोकः, II. 77. 2.

(x) अहन्तनीयानतिकोमलश्च
स्तनद्वयं वोढूमलं न तावत् ।
इतीव तत्सम्वहनार्थमस्याः
वलित्रयं [3]पुष्यति मध्यभागः ॥ fol. 77*a*.
ib., मध्यवीचिः, द्वितीयश्लोकः, II. 78. 2.

(xi) तासाम् पीनस्तनकलसयोः स्थूलमुक्ताभिरामा
वेणीभृतास्त्रिवलीविषमे तीर्थगायामभाजः ।
वक्रे लोलालकविलुलिताः[4] केतकक्षोदलक्ष्मीं
प्राप्तः क्रीडावनविहरणे विन्दवः स्वेदवारां ॥ fol. 89*a*.
ib., वनविहारवीचिः, पञ्चमश्लोकः, II, 107. 5.

(xii) विभ्राणास्तोयलग्नम्वसनमवसनादामनि श्रोणिभारे
दूरादन्योन्यसाचि स्मितचतुरसखी कामिभिर्वीक्षमाणाः ।
उक्षेरुस्तीरलेखां विपुलकमलिनीपत्रमीषद्विलक्षा [89*b*.
वक्षोजाग्रेषु कृत्वा हरिणशिशुदृशो वी(त*)चिनांशुकेषु ॥ fol.
ib., जलक्रीड़ावीचिः चतुर्थश्लोकः, II. 108. 4.

(xiii) प्रियायाः प्रत्युषेगलितकवरीवन्धनविधा-
वुदञ्चद्दोर्व्वल्लीदरचलित[5]लोलाञ्चल [6]म्बरः ।
घनाद्रूते[7] पश्यत्यथ मयि समन्दाक्षहसितं

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[1] थित, Sr. [2] त, S. त, Sr. [3] पुष्य, S. पुष्ण, Sr.
[4] लतिकालिताः, A. [5] चो, Sr. [6] श्वरः A. [7] कृते, Sr.

नमन्त्यास्तद्रुपं[1] यदि लिखितुमीशो[2] मनसिजः ॥ fol. 99*b*.

ib., उषाप्रियदर्शनवीचिः, द्वतीयश्लोकः, II. 135. 3.

v) यत्र [3]तत्रवति सजुबन्धकी प्रीतये मदनशासनादिव । [103*b*.
नीलकान्तपटतामुपाययौ सूचिभेद्य निविड़ं निशातमः ॥ fol.

ib., अन्धकारवीचिः, चतुर्थश्लोकः, II. 145. 4.

(xv) क्षौणीन्द्र त्यजति क्षमां त्वयि रणे दोः शालिनोप्यक्षमाः
प्रत्यर्थिव्रथ कम्पमानतनुषु त्वच्चानुकम्याकुलः ।
त्वं गृह्णासि भुवः करं मृगदृशामेतेऽपि च स्वर्भुवां
तेभ्यस्तेभ्यधिक नु किं गुणिभिरप्य[4]र्द्यीयते यद्भवान् ॥ fol. 124*a*.

चाटुप्रवाहः, चित्रोक्तिवीचिः, द्वितीयश्लोकः, III. 13. 2.

(xvi) निद्रा जिह्मदृशः सखिष्वपि स वैलक्ष्यानखाङ्कव्रण
व्यादेशां शुकलेखया प्रतिपदं शीत्कारिवक्त्रेन्दवः ।
त्वत्सेवासमुपागतक्षितिभुजान्निर्यान्ति लीलागृहा
देताः प्रौढ़रतिश्रम प[5]ग्निथिलैरङ्गैः कुरङ्गीदृशः fol. 132*b*.

ib., भोगावलीवीचिः, द्वतीयश्लोकः, III. 33. 3.

(xvii) पश्चात्खुरद्वितयखण्डितभूमिभाग (:*)
मूर्द्धोक्षताग्रचरण[6]द्वयमुग्रहेषं ।
मूर्द्धावगाहनविहस्तनिजाम्बरावं[7]
माराज्जनः[8] परिजहार खलस्तुरङ्गं ॥ fol. 171*b*.

उच्चावच प्रवाहः, तुरगवीचिः, प्रथमश्लोकः, V. 2. 1.

(xviii) क्षतशीकरवृष्टिकेशरैवसक्षत्स्कन्धमवन्धवंधुरन् ।
अपिवच्चर[9]णाग्रताड़ितं तुरगपङ्किलमापगा पयः॥ fol. 171*b*.

ib., *ib.*, द्वितीयश्लोकः, V. 2. 2.

(*b*) *Jalhana's Subhāṣita-muktāvalī.*

(xix) निजनयनप्रतिविम्बैरम्बुनि बहुशः प्रतारिता कापि ।
नीलोत्पलेऽपि विमृशति करमर्पयितु कुसुमलावो ॥

गोईधोई कविराज । fol. 132*b*.

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[1] नक्ति यदि. S. [2] क्षातु, S. [3] यच, Sr. [4] द्वी॰, A.
[5] प्र, S. Sr. [6] पक्षय, A. [7] म, A.
[8] वारा, A. [9] चारे, A.

Quoted in the *Sāhitya-darpaṇa* without the author's name (8th *pariccheda*, verse 15).

(*c*) *Sārṅgadhara-paddhati.*

(xx) छिनत्सि ब्रह्मशिरो यदि प्रथयसि प्रेतेषु सख्यं यदि
क्रीवः क्रीडसि मातृभिर्यदि रतिं धत्से श्मशाने यदि ।
दृष्ट्वा संहरसि प्रजा यदि तथाप्याधाय भक्त्या मनः
कं सेवे करवाणि किं त्रिजगतो शून्या त्वमेवेश्वरः ॥ धोईकवेः ॥

Peterson's Edition, No. 1161, p. 189. Ascribed to Umāpatidhara in the *Sūkti-karṅ-āmṛta.*

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OF THE

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List of Officers and Members of Council

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March, 1906.

The Monthly General Meeting of the Society was held on **Wednesday, the 7th March, 1906, at 9-15** P.M.

His Honor Sir Andrew Fraser, K.C.S.I., President, in the chair.

The following members were present :—

Lieut.-Col. A. Alcock, C.I.E., F.R S., Dr. N. Annandale, Mr. I. H. Burkill, Babu Monmohan Chakravarti, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Rev. E. Francotte, S.J., Babu Amulyacharan Ghosh Vidyābhushana, Mr. H. G. Graves, Mr. D. Hooper, Hon. Mr. A. C. Logan, Dr. M. M. Masoom, Hon. Mr. Justice Asutosh Mukhopadhyaya, Lieut.-Col. D. C. Phillott, 23rd Cav. F.F., Mr. G. E. Pilgrim, Rai Ram Brahma Sanyal Bahadur, Pandit Yogeśa Chandra Sastri-Sankhyaratna-Vedatirtha, Mahamahopadhyaya Satis Chandra Vidyabhuṣaṇa, Mr. H. Nelson-Wright, Rev. A. W. Young.

Visitors :—Babu R. D. Banerji and Mr. A. H. Phillips.

The minutes of the last meeting were read and confirmed.

Twenty-five presentations were announced.

It was announced that the Hon. Sir A. Pedler, Kt., had expressed a wish to withdraw from the Society.

The President announced :—

1. That the Council had appointed Lieut.-Col. D. C. Phillott, General Secretary *vice* Mr. J. Macfarlane, resigned.
2. That Mr. Macfarlane and Mr. J. A. Chapman had been appointed Members of the Council.

The General Secretary read the names of the following gentlemen who had been appointed to serve on the various Committees for the present year.

Finance and Visiting Committee.

Dr. N. Annandale.
Mr. I. H. Burkill.
Mr. J. A. Chapman.
Mr. W. K. Dods.
Mr. A. Earle.
Mr. T. H. Holland.
The Hon. Mr. Justice Asutosh Mukhopadhyaya
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Babu Monmohan Chakravarti.
Mr. Hari Nath De.
Mr. E. A. Gait.
The Hon. Mr. Justice Asutosh Mukhopadhyaya.
Dr. E. D. Ross.
Pandit Satya Vrata Samasrami.
Pandit Yogeśa Chandra Sastri-Sankhyaratna-Vedatirtha.
Mahamahopadhyaya Haraprasad Shastri.
Mahamahopadhyaya Chandra Kanta Tarkalankara.
Dr. C. Thibaut.
Babu Nagendra Nath Vasu.
Mr. A. Venis.
Mahamahopadhyaya Satis Chandra Vidyabhushana.

The Right Hon'ble Baron Curzon of Kedleston, M.A., D.C.L., F.R.S., was ballotted for and elected an Honorary Member.

Kumar Shyama Kumar Tagore, proposed by Mr. T. H. Holland, seconded by Mr. J. Macfarlane; Mr. W. P. S. Milsted, proposed by Major L. Rogers, seconded by Mr. T. H. Holland; Babu Puran Chand Nahar, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; Babu Mohini Mohan Mitra, proposed by Mr .Hari Nath De, seconded by Mr. J. Macfarlane; Mr. Phra Maha Chandima, proposed by Mr. Hari Nath De, seconded by Mr. J. Macfarlane; and Mr. A. C. Woolner, proposed by Mr. J. Ph. Vogel, seconded by Dr. E. D. Ross; were ballotted for and elected Ordinary Members.

The following papers were read :—

1. *An account of the Gurpa Hill in the District of Gya, the probable site of the Kukkutapadagiri*—*By* Rakhal Dass Banerji. *Communicated by* Dr. T. Bloch.

This paper will be published in a subsequent issue of the *Journal and Proceedings.*

2. *Notes on the Freshwater Fauna of India.*—*By* Dr. N. Annandale. *No. I.*—*A variety of Spongilla lacustris from Brackish Water in Bengal. No. II.*—*The Polyzoon Hislopia.*

3. *Some instances of Vegetable Pottery.*—*By* David Hooper.

4. *Sanskrit Literature in Bengal during the Sena rule.*—*By* Monmohan Chakravarti.

This paper will be published in a subsequent issue of the *Journal and Proceedings.*

5. *Notes on some Sea-Snakes caught at Madras.*—*By* T. V. R Aiyar. *Communicated by* H. Maxwell Lefroy.

6. *A descriptive list of the Sea-Snakes (Hydrophiidæ) in the Indian Museum, Calcutta.*—*By* Captain F. Wall, I.M.S. *Communicated by the Natural History Secretary.*

This paper will be published in the *Memoirs.*

7. *Wormia Mansoni, a hitherto undescribed species from Burma.*—*By* Captain A. T. Gage, I.M.S.

8. *On a cup-mark inscription in the Chumbi Valley.*—*By* E. H. C. Walsh.

This paper will be published in the *Memoirs.*

9. *Testudo baluchiorum, a new species.*—*By* Dr. N. Annandale.

Library.

The following new books have been added to the Library during February, 1906.

Agriculture.—*Imperial Department of Agriculture.* Annual Report. 1904-05, *etc.* *Calcutta*, 1906, *etc.* 8°.

Presd. by the Inspector-General of Agriculture in India.

The Babar-Nama. The Babar-Nama, being the autography of the Emperor Babar...written in Chaghatay Turkish; now reproduced in facsimile from a manuscript belonging to the late Sir Salar Jang of Hyderabad, and edited...by S. Beveridge. *London*, 1905. 8°.

E. J. W. Gibb Memorial, Vol. I.

Presd. by the Trustees.

Brockbank, Edward Mansfield. Sketches of the lives and work of the Honorary Medical Staff of the Manchester Infirmary. From its foundation in 1752 to 1830, when it became the Royal Infirmary. *Manchester*, 1904. 8°.

Publications of the University of Manchester. Medical Series, No. 1.

Presd. by the University.

Cornell University. Librarian's Report. 1904-1905, *etc.* [*Ithaca*, 1905, *etc.*] 8°.

Presd. by the University.

Deussen, Paul. The Philosophy of the Upanishads...Authorised English translation by Rev. A. S. Geden. *Edinburgh*, 1906. 8°.

Dos Santos, Joaquim José Judice. Collection Joaquim José Judice Dos Santos: Première partie: Monnaies et médailles de Portugal. Monnaies coloniales, du Brésil, des Indes Portugaises et de l'Afrique. Monnaies et Médailles de l'empire du Brésil. [*Amsterdam*, 1906.] 8°.

Presd. by Herr J. Schulman.

Lefroy, H. Maxwell. The Insect pests of Cotton in India. *Calcutta*, 1906. 8°.

From the Agricultural Journal of India, Vol. I., Part I.

Presd. by the Author.

MADRAS.—*Adyar Library.* Report. 1905, *etc.* [*Madras*, 1906, *etc.*] 8°.

Presd. by the Library.

Merrill, Elmer D. AND OTHERS. I. New or Noteworthy Philippine plants, IV. By E. D. Merrill; II. Notes on Cuming's Philippine plants in the Herbarium of the Bureau of Government Laboratories. By E. D. Merrill; III. Notes on Philippine Gramineæ. By E. Hackel; IV. Scitimineæ Philippinenses. By H. N. Ridley; V. Philippine Acanthaceæ. By C. B. Clarke. *Manila*, 1905. 8°.

Bureau of Govt. Laboratories, Manila, No. 35.

Presd. by the Bureau.

McGregor, Richard C. I. Birds from Mindoro and small adjacent Islands. II. Notes on three rare Luzon birds. *Manila*, 1905. 8°.

Bureau of Govt. Laboratories, Manila, No. 34.

Presd. by the Bureau.

Peake, A. S. Inaugural Lectures delivered by Members of the Faculty of Theology during its first session, 1904-05. Edited by A. S. Peake. *Manchester*, 1905. 8°.

Publications of the University of Manchester. Theological Series, No. 1.

Presd. by the University.

Pope, T. A. The Reproduction of maps and drawings. A Handbook of instructions for the use of Government officials and others who prepare maps, plans and other subjects for reproduction in the Photographic and Lithographic Office of the Survey of India. [*Calcutta*, 1905.] 4°.

Presd. by the Surveyor-General of India.

Walsh, E. H. C. A Vocabulary of the Tromowa dialect of Tibetan spoken in the Chumbi Valley...Together with a corresponding vocabulary of Sikhimese and of Central (standard) Tibetan...Compiled by E. H. C. Walsh. *Calcutta*, 1905. 4°.

Presd. by the Author.

Williams, *Rev.* J. G. Joanis rebiaba Hamba Gyrau Zyma. The Gospel according to Saint John in the Cachari language. Translated by Rev. J. G. Williams. *Shillong*, 1905. 8°.

Presd. by the Govt. of Eastern Bengal and Assam.

5. *The Umgá Hill Inscriptions in the District of Gayā.*—By Parmeshwar Dayal. *Communicated by the Philological Secretary.*

The Grand Trunk Road which passes through the southern parts of the District of Gayā (in Bengal) has long been the most frequented highway in the district; and before the construction of the East Indian Railway, it was the chief route for traffic between Calcutta and Delhi. Travellers passing through this high road generally meet with beautiful sceneries of mountains covered with forest trees, and table-lands intersected by hill torrents rushing through overgrown jungle. About a mile and a half to the west of Madanpur (an important camping ground and Police outpost on this road) the scenery towards the south has always charmed the travellers and attracted their special attention. A group of hills is found covered with forest trees teeming with ruins of temples. One of these temples, standing on the western slope of a hill, is built entirely of stone and is still well preserved. It is very large and attractive, and commands a wide view to the west and north for several miles. Travellers have often been tempted to leave their road and to proceed southward to take a nearer view of the temple. This is the "Umgā Hill Temple," which has since long drawn the attention of archæologists and of the admirers of natural sceneries. In the front of this temple, which faces the east, lies a large slab of stone containing a long Sanskrit inscription of 28 ślokas giving a short narrative of the founder of the temple, Rājā Bhairavendra and of his royal ancestors. The inscription appears to have been noticed so far back as 1847 A.D., by one Captain Kittoe, 6th Regiment, N.I., whose notes with a translation of the inscription, in Hindi, were published in the August and December numbers of the Journal of the Asiatic Society for A.D. 1847, Vol. XXXI. In A.D. 1866, it was again noticed by one Mr. Peppe, whose notes, with a photo of the temple, were published in No. 1 of the Journal of the Asiatic Society for 1866 A.D. I had occasion to see these ruins in 1898 A.D., and on receiving information from one Paṇḍit Devadatta Miśra of Purnādih, a village situated in the vicinity of these hills, of the existence of another long inscription in one of the ruins on the top of the highest peak, I visited the spot twice. For a few years past (since the discovery of an image of Śrī Gaurīśaṅkara in a cave on the top of it) this peak has been named "Gaurīśaṅkara Hill." The way leading to the top of the hill is very difficult and has become misleading by being intersected by numerous footpaths of the wood-cutters. After a long search for the second time, on 5th November, 1901, my labour was crowned with success, and the stone containing the inscription sought for, was found lying loose in the heaps of the ruins of a temple. Some facsimiles of it were taken by me at once, and with the help of the said Paṇḍit Devadatta Miśra, who had accompanied me on this occasion, it was deciphered immediately.

This inscription exists on a slab of stone about 22 inches long and 15 inches broad and is comprised of 15 lines containing 8

ślokas. The inscription begins with salutations to Śiva and Pārvatī, in prose. Then follow the ślokas. The first two ślokas give the names of the 12 ancestors of Rājā Bhairavendra. The third sings, in high terms, the praise of Bhairavendra himself. The fourth śloka mentions the fact of the temples of Uma, Maheśa, and Gaṇeśa, having been consecrated there by the Rājā. The fifth contains the date of construction of the temples in astronomical symbols. After this is a small sentence, in prose, giving the year of construction of the temple in figures. Then follow three ślokas quoted from some Purāṇas describing the merits of such pious deeds and the blessing secured by them. Then follows a small sentence invoking blessings to all. The inscription is dated Saṃvat 1500. The characters are modern Devanāgarī, with very slight difference in some of the compound letters. The figure 5 is of a curious shape, thus ∪+. There would have been perhaps some doubt when deciphering the date 1500 Saṃvat, were it not for the fact that a serial number exists at the end of every śloka, and the figure at the end of the fifth śloka is of this shape. The letters are generally $\frac{9}{16}$th of an inch long. There is a crack in the stone in the left-hand side of the lower corner, and the writing, with the exception of a few words in the end of the last four lines, and a letter or two in the 3rd, 5th, 6th, 7th, 9th, and 11th lines, is well preserved. The stone is perhaps even now lying loose near the heaps of the ruins, and on account of its compact oblong shape is liable to be removed by villagers for domestic use. It would be very well to fix it in a *puckka* platform to be built near these ruins for the purpose. It would be also much helping the cause of archæology if the village staff in charge of Umgā Mahal be requested to see that plants, etc., growing on the ruined temples, are rooted out from time to time. The images of the gods, the consecration of whose temples is mentioned in this inscription, are still seen, some lying in or near the ruined temples, and others placed in a cavern on the top of the hill.

This inscription being composed in simpler style gives a clearer expression of the facts stated in figurative, and in consequence somewhat ambiguous language in the larger inscription noticed by Captain Kittoe, and therefore seems to throw additional light on the facts stated therein.

In the bigger inscription, the founder of the family of Bhairavendra is named Durdama, which means "invincible" and the epithet Bhūmipāla (King) is attached to this name. As the names of the various successors of the king and with the word "Pāla," such as Kumāra Pāla, Lakṣmaṇa Pāla, etc., Captain Kittoe was led to consider Bhūmipāla as the chief name and Durdama as an epithet. This newly-discovered inscription fully clears the doubt now, as the name Durdama is mentioned in it with a new epithet. The names of the kings given in these two inscriptions are justaposited below for comparison :—

Serial No.	Names of kings given in the inscription noticed before by Captain Kittoe.	Names of kings given in the smaller inscription now discovered.
1	Bhūmipāla	Durdama.
2	Kumārapāla	Kumāra.
3	Lakṣmaṇapāla	Lakṣmaṇapāla.
4	Chandrapāl	Candra.
5	Nayanapāla	Nayapāla.
6	Saṇḍhapāla	Saṇḍheśa.
7	Abhaya Deva	Abhaya Deva.
8	Malla Deva	Malla.
9	Keśi Rāja	Keśīśvara.
10	Barasiṃha Deva*	Narasiṃha.
11	Bhánu Deva	Bhānu.
12	Someṣvara	Soma.
13	Bhairavendra	Bhairava.

* (Should be "Narsiṃhadeva.")

It will be seen that the termination "*pāla*" has not been given in the names noted in the 2nd inscription except in Lakṣmaṇapāla and Nayapāla. The name Nayanapāla of the 1st inscription is Nayapāl in the 2nd inscription. Saṇḍhapāla of the 1st is Saṇḍheśa in the 2nd. Keshraj is Keśiśvara. It also becomes clear that the name Barasiṃha read by Captain Kittoe is actually Narasiṃha.

In the last para. of his note on the larger inscription, Captain Kittoe notices the fact of another inscription of the year 1297 A.D. having been found in the hills of Sirgûjā by Colonel Ously, recording the fall in cattle of a Rājā named Lachhmandeva, son of Kumāra Rajá. Bhairavendra (whose last inscription, now under notice, is dated Saṃvat 1500, corresponding to A.D. 1443) is the 10th in descent from Lakṣmanpāla. This gives an approximate period of about 15 years to each king, and takes back King Durdama to the earlier part of the 13th century A.D.

About three miles to the west of the village of Umgā, there is another small hill covered with ruins of temples, etc., called Sandhail Hill. In one of its caves, called "Sitā Thāpā," there are still located some old sculptures, with a few words of insignificant inscriptions here and there. The Chief "*Liṅgaṃ* of Śiva" is named Saṇḍheśvara Nātha. Near the Police station of Fatehpur, about 45 miles east of Umgā, there is another shrine called Saṇḍheśvara Mahādeva, which is surrounded by views and which is much frequented by pious Hindus. In honour of this shrine a fair is still held in the Śiva Rātri festival, in the month of Phālgun every year. These facts naturally suggest the idea that both these shrines were probably consecrated by the King Saṇḍheśa, one of the ancestors of Bhairavendra of Umgā, and that the kingdom of Saṇḍheśa extended over a considerable area in this district. About 25 miles north-east of Umgā is Konch which

is famous for a very large ancient tempie built of bricks. It resembles in construction the ancient temple at Umgā, and by tradition its construction is ascribed to Bhairavendra of Umgā. This would prove that the kingdom of Bhairavendra was also extensive.

The importance of these two inscriptions lies specially in the following points, *viz* :—

(1) That they contain a full description of the geneology of 13 kings of the lunar Dynasty, and may, on the discovery of some important inscription of any of the kings of this Dynasty, throw some light on the ancient history of the district of Gayā.

(2) That they contain clear dates in the widely-known era of Vikramāditya, and thus give a very clear idea of the period, when the facts stated in them occurred.

(3) That one of them maintains the fact of consecration of a temple to Jagannātha, Balarāma and Subhadrá, and therefore serves as a conclusive evidence of the fact that the worship of these gods prevailed in Gayā, at least so far back as the 14th Century A.D.

(4) That the other inscription mentions the fact of construction of a temple to Umā, Maheśa and Gaṇeśa. The images lying near the ruins of the temple are one of Gaṇeśa and the other of Gaurī-Śaṅkar, *viz.*, of Gaurī, sitting on the left thigh of Śaṅkara (Śhiva). This image is of a comparatively modern form, though of a very ancient type. I mean its design is like that of the images of Gaurī-śaṅkara, made of black stone, lying mutilated here and there throughout the district (specially in the town of Gayā) in vast numbers, which by their appearance seem to be very ancient, and which in structure resemble the ancient Buddhist sculptures, which bear inscriptions in Kuṭila or other still more ancient characters; but the image of Gaurī-śaṅkara found near the ruins of the Umgā temple, on the top of the hill, is not of black stone, is much inferior in sculpture, and appears to be of a comparatively very recent period. A figure of Gaurī-śaṇkara, lying in the cave of Sitā-Thāpā in the Sandhail hill, however, much resembles this image. The images of Gaurī-śaṇkara are found in abundance in this district, specially in the town of old Gayá, as stated before. Some are fixed in the walls of modern temples or private buildings, while others are lying here and there under trees or in ruined temples like the Caityas, the relics of the Buddhist faith. The enshrinement of such a figure of Gaurī-śaṇkara is entirely out of fashion in this period in India or at least in Behar. The facts that very old images of Gaurī-śaṇkara are found in great numbers everywhere, and that the enshrinement of the most modern of them yet discovered, has been clearly mentioned in an inscription, dated A.D. 1443, are likely to throw some light on the religious history of India. It would appear that the worship of the image of Gaurī-śaṇkara was much in vogue for several hundred years before the 15th century A.D.

(5) That these are perhaps the only inscriptions in the district, with the exception of the cave inscriptions of the Barāber

Hills, and the inscription of Kūlchānd, a governor of Gayā, under the Emperor Firoze Sháh, dated 1429 Saṃvat, in the temple of the Sun God in Gayā at Suraj Kund (published by Professor Keilhorn, C.I.E., in the Indian Antiquary, Vol. XX, for September 1891), that still remain attached to the ruins of the ancient temples, the construction of which they commemorate.

(6) That they bear a decisive evidence of the fact that the modern Deva Nāgarī character continues almost unchanged from nearly 500 years; and that, therefore, the inscriptions found in Gayā, containing no date in any recognised era, and written in characters much different from modern Deva Nāgarī, must either be very ancient or written in imported characters then prevalent in other parts of India, by people who came to Gayā either as pilgrims or as conquerors. In this connection it may be said that the following inscriptions now available in the town of Gayā, which bear a clear date in the era of Vikramāditya, are written in modern Deva Nāgari character:—

(*a*) Inscription dated 1257 Saṃvat, 1200 A.D., on a slab of stone fixed on a wall on the northern side of the temple of Parpitā maheśvara in Gayā, and being No. 22 of the list of Gayā inscriptions given by General Cunningham, in Vol. III of his report on the Archæological Survey of India.

(*b*) Inscription of Sūryadāsa, dated 1516 Saṃvat, attached to the Gayeśvari temple in Gayā (being No. 28 of the list of General Cunningham), a translation of which was published by him in Vol. III of his aforsaid report.

(*c*) Inscription of Kūlachānd, dated 1429 Saṃvat, corresponding to 1373 A.D., attached to the Sūrya Kuṇḍa temple in Gayā, published in the Indian Antiquary, Vol. XX, pp. 312 to 315.

(*d*) Inscription dated 1519 Saṃvat, of seven long lines on a slab of stone, about 25 inches long and 7 inches broad, fixed on a wall in the temple of Koṭeśvara Mahādeva, south of the well-known temple of Sákṣī Mahádeva near Viṣṇupada in Gayá.

According to local tradition, the line of this family of the lunar kings ended with Bhairavendra, the last king named in these inscriptions. After his death, his widowed Queen is said to have succeeded him; but she is said to have been overpowered by one of the ministers of Bhairavendra, who was a Bhát (bard) by caste, but whose name is not known now. This Bhát minister was trying to seize the throne for himself when chance ordained it otherwise.

It is said that four brothers, warriors, belonging to the family of the Mahārāṇā of Udaipur were proceeding to the shrines at Gayá by the route, which later on seems to have been developed into the Grand Trunk Road by the Emperor Shēr Sháh. They happened to halt for the night under some trees near a well in front of the town of Umgā, the capital of

Bhairavendra. Some maidservants of the widowed Queen, who came to fetch water, asked them not to halt there as tigers used to come there at night. The brothers did not mind this warning, and stayed there, and actually killed some tigers, This spread the fame of their valour next morning so much so, that the Queen solicited their assistance in disentangling herself from the clutches of the Bhāṭ minister. The brothers readily offered their services, and succeeded in killing the Bhát minister. The Queen, in recognition of this service, adopted one of them, named Rāo Bhānu Singh, as her successor. This man, who belonged to the Sisodhiā family of the Rájpoots of the Solar dynasty, stayed there and was the founder of a new generation of kings who ruled for a long time at Umgā. Of his three brothers, one is said to have proceeded to Nepal, where he is supposed to have become the founder of a new line of kings. Another of them is said to have proceeded to Purī, in Orissa, and to have been the founder of a new line kings of the Solar dynasty there. The fourth brother is said to have returned to Udaipur.

Rao Bhānu Singh, according to some papers, supposed to exist in the family of the present Rájá of Deo, is said to have been succeeded one after the other by 15 other Rājās[1] named below, the last of whom, Rājakumāra Jagannātha Prasāda Nārāyaṇa Siṃh of Deo, is now a minor, aged about 9 years, whose property is under the management of the Court of Wards. His father Raja Bhickham Nārāyaṇa Siṃh Bahādûr died in 1898 A D. Assuming that the accession of Rao Bhānû Singh happened in 1448, *viz.*, after five years of the date of the last inscription of Bhairavendra, the 15 Rājās appear to have reigned throughout a period of 450 years, giving an average of thirty years to each reign. It is said that Atibala Singh, the sixth in descent from Rao Bhānu Singh, killed the then Muhammadan rulers of Deo, and removed his capital from Umgā to Deo. The fort at Umgā is now a heap of ruins covering a large area and overgrown with jungle. Some traces of gateways, walls and wells can still be found, and in one of the rooms are still enshrined some family gods, to worship which the Rājās and Rāṇīs of Deo even now use to go to the ruined fort once a year or at least on the occasion of marriages.

A tomb of Bijûli Shahid at Deo, and one of Dánā Shahid at Ketaki, a neighbouring village, are still associated by tradition with the conquest of Deo by Atibal Singh.

In this connexion it may be said that almost all the peaks and ranges of hills in the southern part of the district of Gayá have marks of ruins on them. Some of them were apparently the strongholds of kings, while others were the sites of sacred shrines.

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[1] (1) Rao Bhānu Siṃha. (2) Sāhasa Malla Siṃha. (3) Táráchand. (4) Biśvambhara Siṃha. (5) Kalyáṇa Siṃha. (6) Atibala Siṃha. (7) Nayapāla Siṃha. (8) Pratāpa Siṃha. (9) Prabil Simha. (10) Chatrapati Simha. (11) Fateh Nārāyaṇa Siṃha. (12) Ghanaśyāma Siṃha. (13) Mitrabhānu Siṃha. (14 Mahārājā Sir Jayaprakāśa Siṃha, Bahadur, K.C.S.I (15) Rājā Bhikham Nārāyaṇa Siṃha Bahadur. (16) Rājkumāra Jagannātha Prasāda Nāyaṇa Singh (the present proprietor of the Deo Raj).

The ruins on the hills of Mandā, Pāchār, Dongrā, Cheon, Bakan, Sandhail, Umgā, Arānagar (about six miles south of Deo), Pawai, Koluha, Singar, Maher, etc , may be quoted as instances. In the days of yore when the use of artillery was in its infancy or totally unknown, or out of practice on account of being inhumane, kings and noblemen probably selected their capitals in hills and other inaccessible places where fortification was rendered easy by nature. To build a castle in the plains was perhaps considered unsafe. The seats of Government were therefore in the southern hills and in the inaccessible jungles, which still abound in ruins of towns and palaces. The northern fertile plains of the Gayá district were therefore perhaps less densely populated in those days, being more open to foreign attacks.

Text of the inscription on the top of Gauri Shankar Hill near Umgā,
District Gayá.

ॐ नमः शिवायै च नमः शिवाय ॥ आसीद्दुर्दमदुःखदावदहनः सोमान्वये दुर्दम स्तत्पुत्रः कुलपालकोगुणनिधिन्नाम्ना[1] कुमारोऽभवत् । तस्माल्लक्ष्मणपाल एक-सुकृती चन्द्रस्ततश्चन्द्रव[त्प्र]ह्लादो नयपाल एकशरणः सप्तेषु इत्यात्मकः ॥ १ ॥ जज्ञे योऽभयदेव एकपुरुषो मल्लः प्रसूत[स्त]तस्तस्मात् केशवभक्तियुक्तिनिपुणः केशीश्वरो धार्म्मिकः । तत्सूनुर्नरसिंह एव रिपुजिद्भानुर्म्महीयांस्ततः सोमः सोमकुलावत[2]न्सपरमो ब्रह्माण्डदः कोटिदः ॥ २ ॥ तस्माल्लोकविवर्द्धनो नृपगुरुर्वंशस्य कर्त्ता प्रभुः श्रेष्ठः सद्व[सुलो]कपो वसुमतो येनास्ति राजन्वती । दीनत्राणतला गयागदिविषत्प्रासादक्षद्धर्म्मविच्छ्री[3]मद्वैरवभूपतिर्गजपतिः कीर्त्या च रामोपमः ॥ ३ ॥ उमां महेशं सगणं गणेशं संस्थाप्य वेधा विदधे विधिज्ञः । नदादिवर्य्यै[4] रमगं गुणाढ्यं सोमान्वयानामिह पत्तनं च ॥ ४ ॥ गिरौ गिरीशं गिरिजां गणेशं खखेषुचन्द्रे खलु विक्रमाब्दे ॥ द्वैष्ठे[5]ऽसिते मासतिथौ च चन्द्रे प्रत्य[6]ष्ठिपद्वैरव एक भूपः ॥ ५ ॥ अत्राङ्केनापि सम्वत १५०० ॥ कृत्वापि पातकं घोरं ब्रह्महत्यादिकं नरः । कारयित्वा हरेर्द्धाम धूतपापो दिवं व्रजेत् ॥ ६ ॥ तीर्थे चायतने पुण्ये सि[द्धक्षे]त्रे तथाश्रमे । कर्त्तुरायतनं विष्णोर्यथोक्तात्त्रिगुणं फलं ॥ ७ ॥ फलप्रतगुणं शैले[यथो]क्तात्परिकीर्त्तितम् । सहस्रगुणितं पूर्त्ते कर्त्तुर्देवालयस्य च ॥ ८ ॥ शुभमस्तु सर्वम् ॥

1 Should be गुणनिधिर्न्नाम्ना ।

2 Should be कुलावतंस ।

3 In the original it is श्रिच्छ्री, that is, the च् is wanting.

4 It can be also read नदादि दुर्ग्यैर् ॥

5 द्वैष्ठे is probably a mistake ज्यैष्ठे ॥

6 प्रत्यष्ठिपत् does not seem to be correct Sanskrit : may be प्रातिष्ठिपत्

Translation of the second inscription discovered recently on the top of Umgā Hill in Gayá.

Om! Salutation to Śivā (Gaurī) and to Śiva.

There was in the lunar race one (King) Durddama the invincible, a fire for the forest of miseries. His son was Kumára, the supporter of his race, and the ocean of virtues. Of him (was born) Lakṣmaṇa Pāla, the virtuous; and of him Candra, who was like the moon; the lotus-eyed Nāyapāla the refuge (of all); his son was Saṇḍhesh.—1.

Of him was born Abhayadeva the Great; of him Malla, and of him the virtuous Keśiśvara well up in the devotion of Keśavá. His son (was) Narasiṃha, the defeater of enemies. Of him (was born) Bhānu the Great, and of him, Soma, the jewel of the ear of the lunar race, the great bestower of worlds and giver by ten millions.—2.

Of him was born King Śri Bhairavendra, the extender of dominions, the leader of kings, promoter of his race, the lord, the great, the accumulator of treasures, the supporter of worlds, the king by having whom the earth has the honour of being named a kingdom, (who is) the defender of the poor, the excavator of tanks, the performer of sacrifices, the consecrator of temples to gods, the knower of Dharmas, the lord of elephants, (who is) like Rāma in fame.—3.

Having enshrined (in temples) Umá, Maheśa and Gaṇeśa with his Gaṇas, (the king who is) well acquainted with rites and (having strengthened) with fortifications of rivers, etc., (he) made Umgá the residence of the clans of the lunar dynasty, an abode of (all) good things.—4.

On (this) hill, the King Bhairava, who has no equal, (*Lit.* who is one) enshrined Giriśa (Śiva), Girijā (Gaurī), and Gaṇeśa, on Monday the 12th date of the dark half of the month of Jyaiṣṭha in the year 1500 of the era of Vikramāditya.—5.

Also here in figures 1500.

Even he, who commits the most horrible sins, such as the killing of the Brāhmaṇas, etc., by building a temple to Hari, is washed of his sins and goes to heaven.—6.

Three times greater merit than that stated above, (is secured by him) who builds a temple to Viṣṇu in a place of pilgrimage, in a sacred place, in a place of devotion, and in an hermitage.—7.

It is said the merit is 100 times greater than that stated above (to him who builds a temple) on a hill, and thousand times (to him) who builds a temple on the top of a hill.—8.

Peace be to all.

6. *Some Lullabies and Topical Songs collected in Persia by* Lieut. Colonel D. C. Phillott.

The following lullabies (with the exception of No. VI) are common in the districts of Shiraz or Kirman, and probably in other parts of Persia :—

I.

Lullaby.

Lā-lā lā-lā be my Rose ;
Be my darling ; be my *Bul-bul.*
Never die nor leave me.
Lā-lā lā-la lā-lāy.
Lā-lā lā^{s}ī he falls asleep.
The sound of his dada's shoe I hear.
Lā-lā lā-lā, my own wall-flower,
Why wilt thou ne'er rest still ?
Lā-lā lā-lā lā-lā^{s}ī.

II.

Lā-lā^{s}ī lāy-lā^{s}ī lāy-lā^{s}ī lāy-lā^{s}ī
Sleep dear life *lāy-ā^{s}ī lāy-lā^{s}ī.*
Alā[1] *lā^{s}i* Bābā[2] Manṣūr
Go tell my mother.

[1] *Alā* is here part of the lullaby sound : it is not an interjection.
[2] *Bābā* a slave-boy, a kind of 'buttons.' *Manṣūr* "Victorious" is a name often given to negro slaves.

I.

لا لا [1]

لالا لالا گلـــم باشـــي

عزيز و بلبلـــم[4] باشـــي

نميـــري از سرم واشي

لالا لا لا لا لائي

لالا لائي خوابش مي‌آد [2]

صداى نفش بابش مي‌آد[2]

لالا لالا گل خيـــري

چرا آروم[3] نميگيـــري

لا لا لا لا لا ئ

II.

لا لائى لاى لائي لاى لائى لاى لائى

بخواب اى جان شيرين لاى لائي لاى لائى

الا لائي بابا منصـــور

خبـــر بر مادرم رسون

1 *Lā-lā*, lullaby : *lā-lā kardan* (m.c.) "to lull an infant to sleep."
2 *Mī-ād*, vulgar for *mī-āyad*.
3 *Ārūm*, i.e., *ārām*.
4 The Persian bulbul (*Daulias Hafizi*) is very like the English nightingale.

They gave me a pitcher and I went to draw water;
Close by the spring I fell asleep.
Alā lā'ī Bābā Manṣūr
Go tell my mother.

Two Turkish men from Turkistan
Carried me off to Hindustan.
Alā lā'ī Bābā Manṣūr
Go tell my mother.

They married me to the son of a king,
Ruler of men and of women.
Alā lā'ī Bābā Manṣūr
Go tell my mother.

Now four sons I've got,
One's with the flocks, one's with herds,
One's at school [1] and one's in the cot.[2]
Alā lā'ī Bābā Manṣūr
Go tell my mother.

III.

Lā-lā lā-lā my dear son
Sleep my sweet life;
Suhel [3] has risen o'er the hills, the moon behind him.
Oh leader of the caravan, when wilt thou load and start?

1 *Kutū-khāna* for *maktab-khāna*.
2 *Gahvāra* is a *low* cradle of canvas, etc., suspended from four low posts like an English cradle. *Nannī* or *nanū'ī*, vulgarly *gāchū*, is of leather or of canvas and is suspended and rocked like a hammock. The Shah styles the hammock in a circus underneath the trapeze *nānū'ī*.
3 *Suhel* Canopus.

سبـــو دادند بآب رفتم
سر چشمه بخواب رفتم
الا لائی بابا منصـــور
خبـــر بر مادرم رسون

دو تا ترکي ز ترکستـــون
مرا بردند بهندوستـــون
الا لائی بابا منصـــور
خبـــر بر مادرم رسون

عروسیـــم کرده شهزاده
رئیـــس هر نرو ماده
الا لائی بابا منصـــور
خبـــر بر مادرم رسون

حالا دارم چار تا پســـر
یکی رفته سر گله ∴ یکی رفته سر زمه
یکی رفته کتو[2] خانه ∴ یکی دیگر بگهواره
الا لائی بابا منصـــور
خبـــر بر مادرم رسون

III.

لالا لالائی نه نه[3] رودم [4]
بخـــوابا ای جان شیـــرینم
سهیل از کوه در آمد مه بدنبال
بزرگ قافله کی میکنـــي بار؟

3 *Na-na* " mummy," a child's word for mother, and hence a mother's address for a child, *vide* note 2 to Lullaby No. IV.

4 *Rūd P.* = *ṭifl*, a child, son or daughter.

Oh leader of the caravan, pray travel slow
For my little child has lagged behind.
Lā-lā lā-lā be my sweet marjoram,
Thy dada's come; bright be thine e'en.

Come, oh moon of my sky!
Art up-rooting violets:
Art planting roses?
Lā-lā lā-lā be my sweet marjoram,
Thy dada's come; bright be thine e'en.

A white bird was I in the almond tree[1];
Fate cast a stone and broke my wing.
Oh Fate withhold thy hand, for I am young;
The World's to me as yet unknown;
The joy of life's unwon.
Lā-lā lā-lā be my sweet marjoram;
Thy dada's come; bright be thine e'en.

1 Lit. *pista* tree.

بزرگ قافلـــه آرام [1] رانـــي
که طفـــلِ کوچکم مانده بدنبال
لالا لا لا گـــل آبشـــن
بابات آمد چشـــت روشن

بیـــا ماه بلنـــد آسمـــاني
بنفشـــه میکنـــي گل مي نشاني
لالا لا لا گـــل آبشـــن
بابات آمد چشـــت روشن

سفید مرغ بُدم در شاخ بسته
فلک سنگـــم زده بالم شکسته
فلک سنگم مزن که من جوانم
نه دنیـــا دیده‌ام نه شاد کامم
لا لا لا لا گل آبشـــن
با بات آمد چشـــت روشـــن

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[1] *Ābshān* pronounced *ābshun*, in Arabic *sa'tar*, is also called *pūdina-yi kūhī* or hill-mint: here = "my sweet child."

[2] *Chash-at*, vulg. for *chashm-at*.

IV.

Lā-lā lā'ī, my Sweet Life *lā-lā'ī,*
My darling and sweet soul *lā-lā'ī* ;
For thee, dear, I would die *lā-lā'ī* ;
Lā-lā lā-lā lā-lā-lā'ī.
Friends, pleasure in this life's in wealth ;
Who has a child has pleasure perfect ;
Who has no child in this world,
Were he Jamshīd imperfect were he.
Lā-lā lā-lā lā-la-lā'ī.

V.

Lā-lā lā-lā lā-lā lā-lā lā-lā'ī ;
Friends, my sweet son is sleeping ;
Were I to die for him, t'would be but just ;
Lā-lā lā-lā lā-lā lā-lā lā-lā'ī.
Art thou lion, art thou leopard, I know not ;
This I know thou'rt struggling with me ;
Lā-lā lā-ā ī my Sweet Life, *lā-lā'ī.*
Friends my son is sweet of speech ;
He will have a pen and be writer to the Court
His clerks will all be safe from harm,
Lā-lā lā-lā lā-lā lā-lā lā-lā'ī.

IV.

لا لا

لالا لائ جان شیوینـــم لالائ
عزیزو روح نوشینـــم لالائ
برات [1] مادر [2] بمیـــرم من لا لائ
لا لا لالا لالا لائ
عزیزان لذت دنیا بمـــال است
هرانکس طفل دارد با کمال اســت
هرانکـــس درجهان طفلی ندارد
اگر جمشیـــد باشد بیکمال است
لالا لالا لالا لائ

V.

لا لا

لا لا لا لا لا لالائ
عزیزان طفل شیرینم بخواب است
اگر بهرش بمیرم من صواب است
لا لا لا لا لا لالائ
نمیـــدانم که شیـــری یا پلنگی
نمیـــدانم که تو با ما بجنگـــی
لا لا لائ جان شیـــرینم لا لائ
عزیزان طفل من شیرین زبان است
قلم بر دست میرزای دیوان است[3]
نویسنده اش همیشه در امان است[3]
لا لا لا لا لا لائ.

1 *Barât* for *baráy-at.*

2 *Mádar:* relations call children by the same appelation that children call them; thus a mother will call her son or daughter *mádar* or *mádar-ján* and so on.

3 *Ast*, Future Tense.

VI.

Tehran Lullaby.

لا لا لالائي ميخوانم باز
دوستي بسرهنگ مينداز
سرهنگ مي آمد به چاهک
خان باز [1] رفته شهر بابک
لا لا لالائي ميخوانم باز

اسپ سياه جو دادي
دورِ اردو طو [2] دادي
لا لا لا لائي ميخوانم باز
تفنگ نو خريدي
ايتُل اوتل [3] دويدي
جون [4] خودت لا دادي [5]
لا لا لالائي ميخوانم باز

[1] *Mīr Khān Bāz* is the name of the father of the infant.
[2] *Ṭau* = *ṭavāf.*
[3] *Itul utul* = *dar īn tal va dar ān tal.*
[4] i.e., *jān.*
[5] *Lā dādan* = *nuqṣān dādan.*

The following topical songs (*taṣnīf*) collected in Persia are fair samples of those composed and sung by the *lūṭīs*.[1]

1 *Lūṭi* a strolling player, a buffoon, tc., etc.

I.

The King of China's Daughter.

"The King's daughter is just like this and just like that.
Come, show me thine eyes,
That I may describe them."
"Mine eyes—what dost thou want with them ?[1]
Hast never seen the eyes of the gazelle ?
Mine, too, are like them."

"My love's brows are just like this and just like that:
Oh show me thy brows,
That I may describe them."
"My brows—what dost want with them ?
Hast never seen a bow in the bazaar ?
They, too, are like that."

"My love's lips are like this and like that:
Oh show me thine lips,
That I may describe them."
"My lips—what dost want with them ?
Hast never seen a *pista*[2] in the bazaar
They, too, are like that."

"My love's cheeks are like this and like that:
Come, show me thy cheeks,
That I may describe them."
"My cheeks—what dost thou want with them ?
Hast never seen peaches in the bazaar ?
They, too, are like that."

[1] 'What dost thou want with them,' *i.e.*, 'why do you ask about them ?'
[2] Poets compare a mistress's mouth to a *pista* nut. The nut is boiled in its shell, which parts slightly like two lips and exhibits the pink skin of the kernel inside.

I.

دختر شاه چین

"دختر شاه همچین وچین [1] چشمت را بمن بنما تا من بگویم چه چي [2]" *
"چشمم رامیخواهي چکني؟ چشمان آهو [3] ندیدي؟ اینـــهم بهمچیـــه [4]"

" ابروی یارم چین وچین [1] ابروت را بمن بدما تا من بگویم چه چي" *
" ابروم میخواهي چکني؟ کمان به بازار ندیدي؟ اینهـــم بهمچیـــه" *

" لبان یارم چین وچین لبت را بمن بنمـــا تا من بگویم چه چي" *
" لبم را میخواهي چکني؟ پسته ببازار ندیدي؟ اینهـــم بهمچیـــه" *

" لُپان [5] یارم چین وچین لپت را بمـــن بنما تا من بگویم چه چي" *
" لپم را میخواهي چه کني؟ ملو به بازارا ندیدي؟ اینهـــم بهمچیـــه" *

[1] *Hamchīn u chīn* or *chīn u chīn* : colloquial for *hamchunīn u hamchūnīn*.
[2] *Chī* is the vulgar form of *chīz* and *chi chīz* or *chi chī* is vulgar of "what?"
[3] For *na-dīda-ī*.
[4] *Hamchū* is in speaking pronounced *hamchī*. *Ast* is sometimes shortened into a final *a*: this is now considered vulgar.
[5] *Lup*, "cheek."

"My love's teeth are like this and like that:
Come, show me thy teeth,
That I may describe them."
"My teeth—what dost thou want with them?
Hast never seen fresh pearls?
They, too, are like them."

"My love's breasts are like this and like that:
Come, show me thy breasts,"
That I may describe them.
"My breasts—what dost want with them?
Hast never seen Shiraz limes?
They, too, are like them."

"My love's bosom is like this and like that:
Come, show me thy bosom,
That I may describe it."
"My bosom—what dost want with it?
Hast never seen white marble?
It too is like it."

"My love's navel is just like this and just like that:
Come, show me thy navel,
That I may describe it."
"My navel—what dost want with it?
Hast never seen a crystal bowl[1]?
It too is like one."

"My love's 'chastity' is like this and like that
Come, show me thine honour,
That I may describe it."
"My c * * t—what dost wish with it?
Has never seen the foot of a gazelle?
It, too, is like one."

[1] *Nāf-i finjānī dārad;* a point of beauty much insisted on by Persian story-tellers. *Finjān* is the small deep glass for drinking coffee or tea, and *nāf-i finjānī* is a navel deep shaped like a *finjān*.

" دندان يارم چين و چين دندان را بمن بنما تا من بگويم چه چي " *
" دندانم راميخواهي چكني؟ مرواريد تر[1] نديدي؟ اينهـــم بهمچيـــه " *

" پستان يارم چين و چين پستانت را بمن بنما تامن بگويم چه چي " *
" پستانم راميخواهي چكني؟ ليموی شيراز نديدي؟ اينهـــم بهمچيـــه " *

" سينهٔ يارم چين و چين سينه ات را بمن بنما تامن بگويم چه چي " *
" سينهام راميخواهي چكني؟ مرمر سفيد نديدي ؟ اينهـــم بهمچيـــه " *

" ناف يارم چين و چين نافت را بمن بنمـــا تامن بگويم چه چي " *
" نافم را ميخواهي چكني ؟ كاسهٔ بلور نديدي؟ اينهـــم بهمچيـــه " *

عصمت[2] يارم چين وچين ناموست[2] رابمن بنما تامن بگويم چه چي " *
" كُسم[3] راميخواهي چكني سم آهو[4] نديدي ! اينهـــم بهمچيـــه " *

[1] *Tar*, "fresh, *i.e.*, with lustre." [2] *Iṣmat* and *nāmūs, ya'nī farj*.
[3] *Kus* [Ar. pl. *akwās*], is the crudest word for the article either in Persian or in Arabic.
[4] *Z' Sirr-i nihān-ash yak-ī ḥarf būd*
Sum-i āhū-ī rafta dar barf būd.
"——to one thing only can it be compared *i.e.*, to the print of a gazelle's foot in pure snow."

II.

Taṣnīf-i Dukhtar-i Ṣafūrā.[1]

لنگر کشتي روی دریا زده ∴ خربزه بر تخم آخوندها زده
شانه بزلفهای عروسها زده ∴ دانه بتاجان خروسها زده
سنـــگ بدندان صفـــورا زده
چونم که زده ؟ چونم من زدم - والله من زدم - پی وپی زدم - برو ای عزیز
پـــای مغبر سُرید ∴ لنگ صفورا درید ∴ مُشیر که اورا شنید
بر سوی میدان دوید ∴ یخهٔ خود را درید ∴ یک خر مصري خرید
سنـــگ بدندان صفـــورا زده
چونم که زده ؟ چونم من زدم - والله من زدم - پي وپي زدم - برو ای عزیز

III.

Taṣnif.

اب دریا بشم، آبي بنوشم ∴ روزگار
صدای کشتي - بان آید بگوشم ∴ روزگار
الهي[2]، ناخدا ! تو خوش خبر بو[3] ∴ روزگار
که یارم جاهل و تازه سفر بو ∴ روزگار
جفای بیوفایان کرده پیرم ∴ روزگار
برم[4] ؛ یار وفاداري بگیرم ∴ روزگار
اگر یار وفاداري نبـــاشد ∴ روزگار
سر قبـــر وفاداري ببـــرم ∴ روزگار

[1] *Ṣafūrā* was the daughter of a mulla in Shiraz. She had a reputation for learning and piety and used to preach to women from the pulpit. She, however, strayed from the path and this *taṣnīf* was composed by the wags of Shiraz.

[2] *Illāhī* = "I hope." [3] *Bū*, i.e., *bāsh*. [4] *Biram* = *bi-ravam*.

IV.

Taṣnīf-i Ṣādiq-i Mullā Rajab.[1]

[Every second line is from Ḥāfiz.]

تصنیف صادق ملا رجب [1]

همه شب طفل نکو گایم وگاهي زن زشت [2]
مدع رندان مکن ای زاهد پاکیزه سرشت
کیرم از کُس چو برون رفت ره کون بگرفت
همه جا خانهٔ عشق است چه مسجد چه کنشت
در شب تار بهر کس که رسي سیر بگا
کس چه داند که پس پردهٔ که خوب است وکه زشت ؟
دختر نجبه اگر کُس ندهد مدع مکن
که گناه دگري بر تو نخواهند نوشت [3]
شب جمعه [4] تو اگر بچهٔ سیّد [5] گائي
یک سر از کوی خرابات بودت به بهشت

V.

Taṣnīf-i Ṣādiq-i Mullā Rajab.

تصنیف صادق ملا رجب

لُپچهای [5] یارم ماچ قشنگش مي آد
بعد ازان ماچ قشنگ آله - کلنگش [6] مي آد
مادر کهنه لوندي کی یارم را زائید ؟
بحقیقت نگري تف بدوی لنگش مي آد

1 *Ṣādiq* son of Mullā Rajab of Kirmān. He adopted the profession of a *lāṭi* from choice, and his *taṣnifs*, amongst certain classes, have a notoriety.

2 *Gāyam* understood after *zan-i yisht*.

3 *Ki* "because"

4 *Shab-i Jum'ah* is m.c. for *Panj-shamba*. Any good work done on the Muslim Friday night (*i.e.*, the English Thursday night) has a special value.

5 *Lupcha*, dimin. of *lup*, "cheek."

6 *Āla-kulang*, meaning doubtful: probably *garm shadan-i ḥaivānāt dar vaqt-i juft giriftan*.

شکـــل اهلیل [1] یارم گر که بدریا افتـــد
شور وغوغا بســـر ماهي ونهنگـــش مي آد
آن مقنّي [2] پسری چاه زنخـــدان تو کند
آفرین بر تبر و بیـــل و کلنگـــش مي آد
سعـــدي و حافظ شیـــراز دگر شعر نگو
صادق ملا رجب شعـــر جفنگـــش مي آد

VI.

Taṣnīf.

من ازان زماني که دل با تو بستـــم ∴ تو پروردگاري و من حق پرستـــم
ای حبیبم ای طبیبم عشق رویت شد نصیبم
من از آن زمان قسمتـــم شد جدائي ∴ مرا مي کشد این ستمگر [3] الهي
ای حبیبم ای طبیبم عشق رویت شد نصیبم
به یعقـــوب بر [4] گو که در مصـــر دیدم ∴ همان یوسفي را که گم کرده بودي
ای حبیبم ای طبیبم عشق رویت شد نصیبم
الهـــي عز یزت بمیـــرد زلیخـــا ∴ دگر یوسفـــم تاب ازندان ندارد [5]
ای حبیبم ای طبیبم عشق رویت شد نصیبم

VII.

Taṣnīf.

'My heart it loves a gypsy, Oh!'

مسلمانان دلم لولي پسند است ∴ لب و دندان لولي مثـــل قند است
وفا وغیـــرت از لولي مجوئید ∴ پدر سگ دوک [6] تراش غلیته [7] بند است

1 *Ihlīl* for *hilāl*.
2 Digger of *qanāts*.
3 *Sitam-gar*, i.e., *ma'shūqa*.
4 *Bar-gū*, poetical.
5 There seems to be no clear meaning in these two lines. *'Azīz*, "dear" is also a title for the Ruler of Egypt.
6 *Dūk*. The Lulis spin thread.
7 *Ghalīta*, vulgarly *ghiliya*, is a kind of grass from which baskets are woven.

VIII.

Tasnīf.

سه تا دختر دیدم در راه کشون ∴ حلیمه وسلیمه و زر افشون
سه تا بوسه خواستم از هر سه تا شون ∴ سه تا بوسه دادند روی قپها [1] شون
یکی صبح و یکی ظهر و یکی شوم

IX.

Taṣnīf.

[کُرکُر [2] دختر کُردي بود در طهران که در حُسن معروف عصر بود اسمش نسترن *]

یکی ماه بلند در آسمان است کورکو
عجب گُمپ [3] گلي همسایه مان است کورکو

سرِ کوه بلند الله اکبر کورکو
بدیدم دختری همپای [4] مادر کورکو

سلام بمادر چشمم بدختر کورکو
فدای مادر و شیدای دختر کورکو

وفا کردي بمن آخ خوب کردي کورکو
جفا کردي بمن آخ خوب کردي کورکو

الله که مادر قربان دختر کورکو
در عالم محبت چکارم کردي کورکو

سر راهم دوتا شد [5] ای وای برمن کورکو
از من جدا شد ای وای برمن کورکو

1 *Qup*, "cheek." "They gave me their cheeks to kiss."
2 *Kur*, in the dialect of the Lulis, is a small boy or girl.
3 *Gump*, a bunch of flowers. A plump boy is called *gump-i gul*.
4 *Ham-pā*, "with."
5 My road became divided, *i.e.*, I fell in love both with the mother and the daughter.

Mo. Bot Garden
1907

X.

Taṣnīf.

خواهم بر چشمت هردم کشم سرمه .·. ترسم سیاه کنی بسی بخت هر کسی ،
[1] حال هر کسی چون منِ بیکسی .·. مستانه مستانه رندانه رندانه *
خواهم که برزلفت هردم زنم شانه .·. ترسم پریشان کنی بسی پیش ناکسی
[1] حال هر کسی چون من بیکسی .·. مستانه مستانه رندانه رندانه *
خواهم که برویت گاهی زنم بوسه .·. ترسم که پُر خون تو کنی دلم
پیش هر دلم نزد مقبلم [2] .·. مستانه مستانه رندانه رندانه *

XI.

Taṣnīf.

آمدی وه که چه مشتاق و پریشان بودم
چون برفتی ز برم قالب بیجان بودم
روز وشب نمی آسودم
جان خود بسی فرسودم
گرچه بصد رنج ومحن گشتیم ما دور از وطن
در بار شاهی آمدیم
با لطف الهی آمدیم
ما بدین در نه پی حشمت و جاه آمده ایم[3]
ای خدا ترا خواهیم وبس
غیر از تو نداریم فریادرس
از بد حادثه اینجا بپناه آمده ایم [3]
ای خدا بفریادم رس
غیر از تو ندادم دل بکس
چشم رضا ومرحمت برهمه باز میکنی
چونکه به بخت ما رسد اینهمه ناز میکنی

[1] *Va* understood.
[2] This line has no clear meaning.
[3] These lines are from *Ḥāfiẓ*.

XII.

Taṣnīf.

گر بشـــکافند سر و پای من ∴ جز تو نبینند در اعضـــای من
شاها میخواهمـــت - ما همه میخواهمـــت

XIII.

Tasnīf.

هر دم ازین باغ بری میرسد ∴ تازه تر از تازه تری میرسد
حبیب منی های ∴ طبیب منی های

XIV.

Tasnīf.

میمیرم و فدایت میشم خبر نداری؟ ∴ قربان قد و بالات میشم خبر نداری ؟
اقا جان خبـــر نداری؟ ∴ دلبر جان خبـــر نداری ؟

XV.

Taṣnīf on Moti Jan.[1]

دیشـــب من و دل بقـــول آن عهـــد شکـــن
در کوچـــهٔ انتظـــار کـــردیـــم وطـــن
مُت متیجـــان [2] آخ بلـــی ∴ دردت بجان آخ بلی
مُتـــی میـــرد کربلا شیـــراز میشـــد بی بلا
مُتـــی میرد هندوستـــان شیراز میشد گلستان
مُت متیجـــان آخ بلـــی ∴ دردت بجان آخ بلی
نـــدر نمیـــرم [3] که راه بنـــدر دور است
قســـم میخـــورم که آب بنـــدر شور است

1 Moti Jan was a famous Indian courtesan who went to Shiraz.
2 *Mut Mutī Jān*—the lady's name.
3 *Na-mīram* = *namī-ravam.*

مت متیجـــان آخ بلـــی ∴ آرام جان آخ بلـــی
بـــر مزن ای کوچکـــو تیتـــهٔ [1] طلارا
شـــانه مزن آخ کوچکـــو زلف سیـــا [2] را
مت متیجـــان آخ بلـــی ∴ آرام جان آخ بلـــی
بســـر مزن مزن مزن مینـــای [3] برنجـــي
شـــانه مزن ای کوچکـــو زلف نارنجـــي
مت متیجـــان آخ بلـــی ∴ دردت بجـــان آخ بلی
ابـــر ببیـــن ببیـــن هـــوای [4] باران دارد
شیـــرین ببین ببـــین هواي زیتـــون دارد [5]
مت متیجـــان آخ بلـــی ∴ آرام جان آخ بلـــی
دوش در طرف چمن بتی خوابید یکتا پیرهن [6]
ترسم که بوی نستـــرن از خواب بیـــدارش کند
مست است هشیارش کند ∴ با غمـــزده درکارش کند
مت متیجـــان آخ بلـــی ∴ دردت بجـــان آخ بلی

XVI.

Taṣnīf.

دیشـــب سحـــري در کوچه وا شد ∴ شخص عـــربي وارد بمـــا شـــد
اطاق پنجـــدري قبلـــه نما شد ∴ توي زیر زمینـــي دو پام [7] هوا شد
دستمال یارم گم شده زیر درخت گل ∴ یارم‌قدری دلخور شده چچه میزند بلبل

XVII.

Taṣnīf.

در میـــان کُس و کون جنـــگ افتاد ∴ داوري بردند پیـــش کیـــر
گفت "کُس خوب است امّا گفتـــه اند ∴ احسن الاشکال شکل مستدیر"

1 *Tīta* vulg., a gold ornament for the hair. 2 Vulgar for *siyāh.*
3 Enamel work. 4 *Havā* here = *khiyāl.*
5 The allusion is not clear.
6 *Yak-tā pīrahan*, adj. 'with nothing on but a chemise.'
7 *Pām* for *pā-am.*

XVIII.

فرمان فرمای کلاه نمدي[1] ∴ بد کردي شیراز آمدی
بخیالت اینجا کرمانه[2] ؟ ∴ نه اینجا کیر آنجا کونه[3]*

XIX.

Verses by a Dervish to extract money from a British Consul.

دوشینه گفت شوخم با حالت پریشان ∴ در خانهٔ تو جانا من سیر گشتم از جان
سیم معاش دانم در دهر مي نداري ∴ حالت بگوبه قونسل[4] لیکن زخلق پنهان

XX.

Taṣnīf-i Ḥusain-i Lūtī.

لب بر لب نهاد و ناف بر ناف
الف را راست کرد در خانهٔ قاف

1 *Kulāh-namadī:* contrary to the usual custom of *Khāns* he used to wear a Persian felt hat.

2 *Kirmān-a = Kirmān ast.*

3 *Kūn-a = kūn ast.* The Shirazis pride themselves on being *men* and look down on the quiet Kirmanis who are mostly weavers.

4 Also in Arabic قنصل.

7. *Notes on the Freshwater Fauna of India. No. I.—A variety of* Spongilla lacustris *from Brackish Water in Bengal.*—*By* N. Annandale, D.Sc., C.M.Z.S.

Thanks to Carter's[1] classical memoirs, the Freshwater Sponges of India are better known than most of the animals which inhabit our Indian tanks. In Bombay, Carter examined five species, basing on them the researches which laid the foundation of the scientific study of the Spongillidæ as living organisms. Two species have been recorded from Calcutta by Weltner,[2] and two by Bowerbank [3] from Central India. The following list, based mainly on the third part of Weltner's "*Spogniillidenstudien*," [2] shows the distribution, in India and in the world, of all the forms as yet known to occur as members of our fauna :—

Indian Spongillidæ.

Genus *Spongilla*.		
1. *S. alba*, Cart.	...	Bombay.
2. *S. bombayensis*, Cart.	...	Bombay.
3. *S. carteri*, Brok.	...	Bombay, Chota Nagpur, Central India, Calcutta; Madura (Malay Archipelago), Mauritius, Eastern Europe.
4. *S. cerebellata*,[4] Bwrk.	...	Central India.
5. *S. cinerea*, Cart.	...	Bombay; Celebes, Flores, N. America.
6. *S. decipiens*, Weber	...	Calcutta; Celebes.
7. *S. lacustris*, auct.	...	Lower Bengal; Europe, N. America, Northern Asia, Australia.
Genus *Ephydatia*.		
8. *E. plumosa* (Cart.)	...	Bombay; N. America.

The following species have been recorded from countries near India and will probably be found to belong to the Indian fauna :—

Spongilla sumatrana, Weber	...	Sumatra.
Ephydatia fluviatilis, auct.	...	Eastern Asia, Europe, N. America; Australia.
„ *blembingia*,[5] Evans	...	Malay Peninsula.

During a recent visit (January 28th–30th) to Port Canning in Lower Bengal, I was much struck by the enormous number of sponge-gemmules which formed a scum on the surface of some of the shadeless brackish pools so numerous in the neighbourhood. These gemmules originated in a *Spongilla* which incrusted the stems of plants growing in the water and sticks which had fallen into it. Some of the pools were already drying up and the sponge was beginning to be exposed to the air. At one point I saw specimens which appeared to have been carried some distance from the tank by a gale of wind and were hard and dry.

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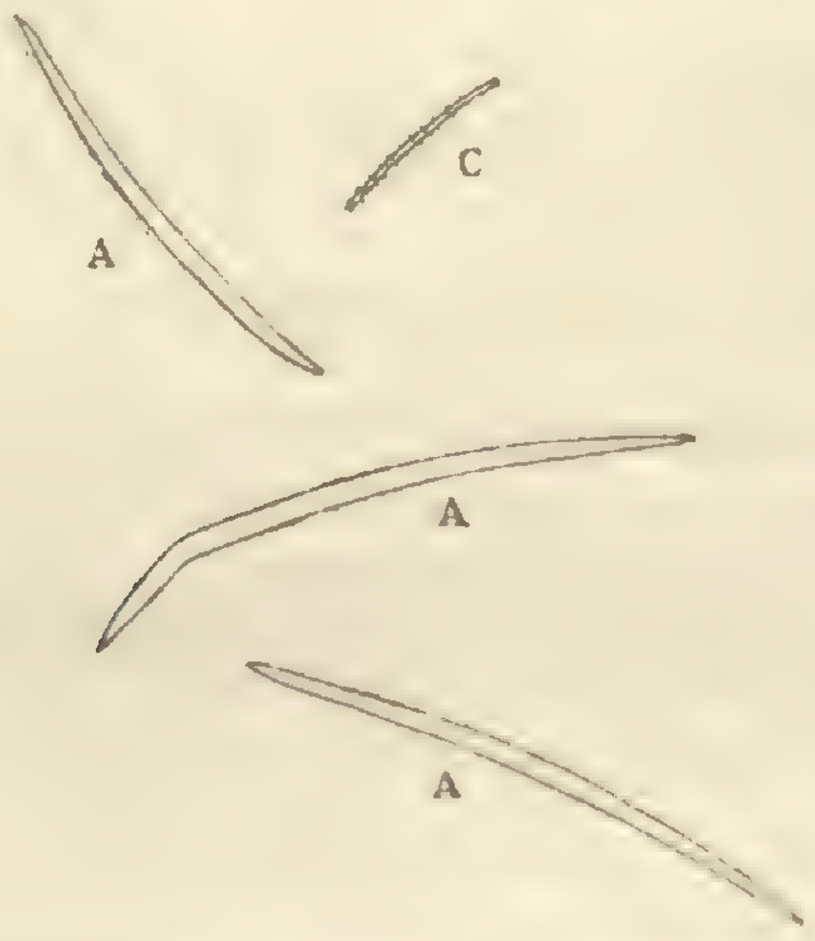
1 *Ann. Mag. Nat. Hist.*, 1847, 1849, 1856, 1859, 1874, 1881.
2 *Wiegm Archiv. f. Naturgesch.* LXI, 1895.
3 *Proc. Zool. Soc.*, 1863.
4 Carter regarded this form as no more than a variety of his *S. alba*, (1881).
5 *Quart Journ Micr. Science*, 1900.

I have made a careful examination of living and preserved material, and I cannot find any specific difference between this sponge and the widely-distributed *Spongilla lacustris*, which is not, however, usually regarded as a tropical form. It may be convenient, for the sake of reference, to give the form a varietal name.

Description of *S. lacustris* var. ***bengalensis***—

Texture firm, resistant, fibrous. *Thickness* never more than half an inch. *Habit* incrusting; without branches, entirely surrounding support; pores and oscula inconspicuous; surface smooth, rounded. *Colour* flesh-colour or dull-green. *Gemmules* numerous, disposed throughout the sponge except on the surface, of two sizes, thickly coated, with a single funnel-shaped opening, spherical. *Spicules*:—skeleton spicules smooth, slender, cylindrical, feebly curved, very rarely bent at an angle, abruptly pointed, joined together in strands to form a reticulation in which the gemmules rest: flesh spicules very slender, cylindrical, feebly bent, pointed, minutely spineal throughout, numerous: gemmule spicules slender, cylindrical, sparsely covered with fine, pointed, recurved spines, which are more numerous towards the ends than at the centre; the spicules very numerous, arranged tangentially, not penetrating coat of gemmule.



A. = skeleton spicules. **C.** = flesh spicule.

Length of skeleton spicule	...	0·3 mm.—0·4 mm.
Length of flesh spicule	...	0·14 mm.
Length of gemmule spicule	...	0·16 mm.
Diameter of larger gemmule	...	0·9 mm.
Diameter of smaller gemmule	...	0·6 mm.

The most notable peculiarity of this variety is the total absence of branches,[1] but in certain forms of the species the branches are better developed than in others. *S. lacustris* is so variable

[1] Ledenfeld describes his *S. lacustris* var. *sphaerica*, from New South Wales, as "*ohne Fortsätze, kuglig oder eiförming*," (*Zool. Jahrb.* part 2, 1887). The exact position of this form is doubtful; Weltner is not sure that it belongs to the genus *Spongilla*, no gemmules being available for examination.

that Potts,[1] in his monograph of the Freshwater Sponges of the world, recognized six varieties in addition to the typical form. The Bengal form most nearly resembles his *montana* (from the Catskill Mountains, New York) as regards its spicules; but in the gemmule spicules the spines are more distinctly aggregated at the ends in the Bengal form. I regard the angularly bent skeleton spicule, of which I have only seen twoexamples, as an abnormality. The gemmules are very distinctly of two sizes, the smaller ones being less numerous than the larger ones. They are scattered indiscriminately through the sponge, and in both the opening is directed outwards. They are not found in groups, and have no large air-cells. Dried pieces of the sponge bear a close external resemblance to Weltner's[2] figure of part of a branch of *Euspongilla lacustris* from Germany; but there is in the centre of each of such pieces of the Bengal form a twig or grass-stalk which would be absent from European specimens. The green colour of the Port Canning examples was due to a multicellular alga[3] whose filaments ramified among the spicules. This alga was evidently growing with great activity, but it had only commenced to invade certain pieces of the sponge.

S. lacustris has been recorded from brackish water in Europe and possibly in Australia. The species is evidently adaptable, and its great fertility as regards gemmules, gives it every chance of a wide dispersal.

The common sponges in the Calcutta tanks are *S. carteri* and *S. decipiens*. The former propagates itself during the winter months, by means of buds, and forms gemmules rather later in the year than does *S. decipiens*. By the end of January, specimens of the latter are usually reduced to mere skeletons containing these bodies, while even large examples of *S. carteri* are, at the same date, either devoid of gemmules or contain only a few.

The life-history of these two forms differs also in other respects. The buds of *S. carteri* attach themselves chiefly to water-plants such as *Pistia stratiotes* and *Limnanthemum* and grow rapidly into globular masses, which may be six or eight inches in diameter. These gradually weigh down the leaves or roots to which they adhere, and finally sink them in the mud. The lower part of the sponge then dies, the cells probably migrating towards the upper part. *S. decipiens*, on the other hand, incrusts the lower part of the stems of reeds, bricks which have fallen into the water, and other sunk objects. Neither species is exposed to the air for any great part of the year in Calcutta, as both are said by Carter to be exposed in Bombay.

Both species shelter a number of Insect larvæ, some of which are generically identical with those found in the same position in Germany. A minute Naidomorph worm is abundant in the

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1 *Proc. Acad. Nat. Science, Philadelphia*, 1887.
2 *Ent. Nachr.* (Berlin) xx.,'No. 10, p. 150, fig. 7, 1893.
3 Cf. M. and A. Weber, *Zool. Ergeb. Niederland Öst-Ind.* Vol. 1, page 50, pl. V, fig. 1.

decaying tissues of older specimens, and appears to play an important part in the liberation of the gemmules. At Port Canning I found a crab of the genus *Varuna* concealed in considerable numbers among grass stems coated with *S. lacustris*. The relations between the Freshwater Sponges and the various animals associated with them is a subject to which I hope to return later.

8. *Notes on the Freshwater Fauna of India. No. II.—The Affinities of* Hislopia.—*By* N. Annandale, D.Sc., C.M.Z.S.

The genus *Hislopia* was founded in 1858 by Carter for a freshwater Polyzoon[1] sent to him in spirit from Nagpur by Hislop the geologist; while in 1880 Jullien[2] described a form, which he recognized[3] in 1885 as allied to Carter's, under the name *Norodonia*, basing his diagnosis entirely on external characters. The systematic position of these Polyzoa has remained obscure. Stoliczka,[4] who referred to the existence of *Hislopia* in Lower Bengal in his account of the brackish water *Membranipora bengalensis*, did not carry out his intention of describing its life history. A recent examination of living material from a tank on the Calcutta 'maidan' enables me to give a general account of the anatomy of Carter's species, *H. lacustris*, and to indicate its affinities in general and its relationship to *Norodonia*.

Carter, who regarded his new genus as allied to *Flustra*, described the colony as "spreading in aggregation over smooth surfaces, sometimes in linearly, but for the most part with no definite arrangement." In Calcutta the linear arrangement is far commoner than any other, but occasionally several zoœcia are adjacent to one another in a transverse series. This may be due either to parallel branches chancing to approach one another, in which case there is no communication between the polypides, or to lateral budding. In any case the zoarium is flat and consists of a single layer of cells. The substance of the zoœcia is transparent but stiff, while the thickened margins of the orifice have a deep brownish tinge.

The individual zoœcia are described by Carter as "irregularly ovate, compressed," and his figure (*op. cit.* pl. VII, fig. 1) shows that considerable variation in their outline is brought about by the pressure of neighbouring cells. Although he represents, in the same figure, a considerable flattened area between some of the cells, he does not note that their horny margin is of considerable width, and his fig. 2 is misleading in this respect. Moreover, the relative length of the spines at the angles of the thickened borders of the orifice is more variable than he indicates. In some zoœcia they are very short, and occasionally two or even three of the four are vestigial. The large "stoloniferous holes" he describes and figures are a very marked feature; the actual plate being normal in character, although the depression at the base of which it occurs is of considerable extent. Even when the colony consists of a single line of zoœcia these depressions may be present on the sides as well as the extremities of each cell. They then indicate that lateral budding is about to commence; for although no aperture

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1 *Ann. Mag. Nat. Hist.* (3) I, page 169, pl. VII.
2 *Bull. Soc. Zool. France*, 1880, page 77.
3 *Ibid.* 1885, page 181.
4 *Journ. As. Soc. Bengal.* XXXVIII, (2), page 61.

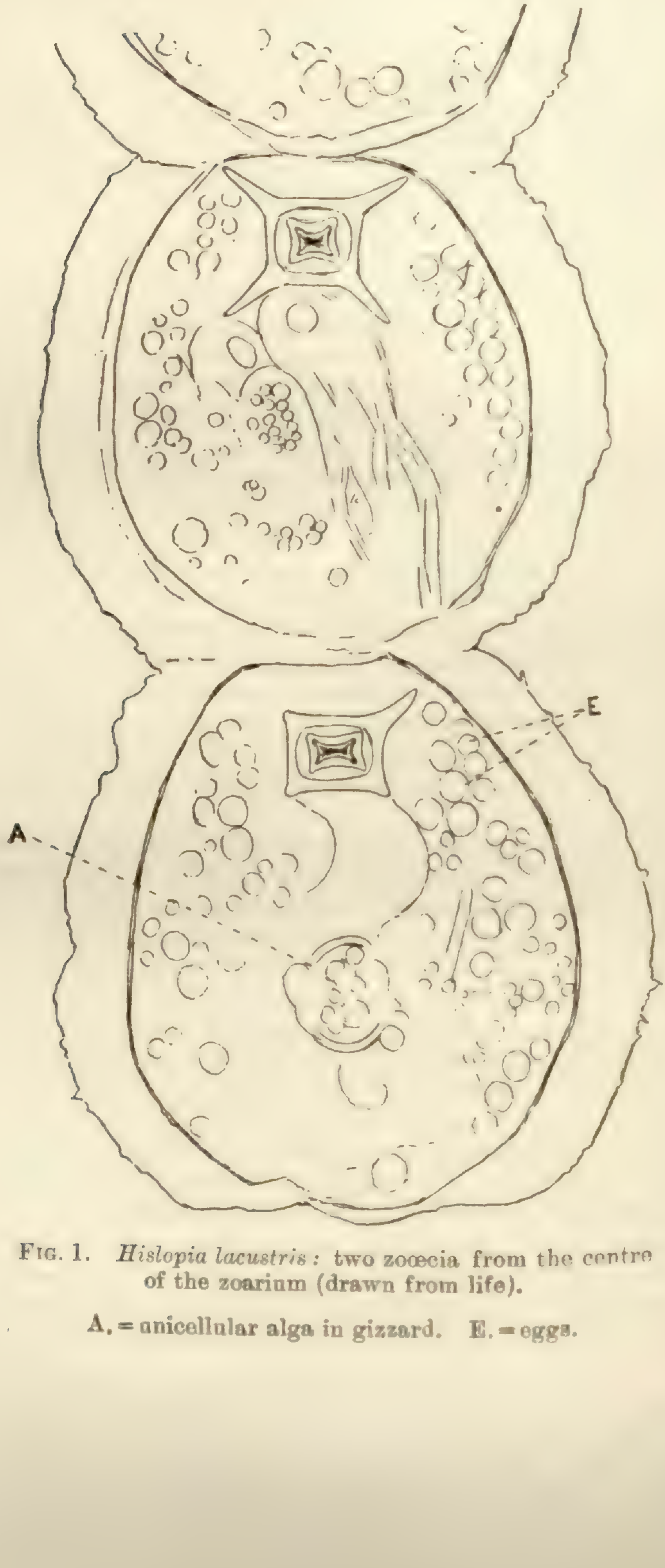

FIG. 1. *Hislopia lacustris :* two zoœcia from the centre of the zoarium (drawn from life).

A. = unicellular alga in gizzard. E. = eggs.

as yet exists, a roundish mass of undifferentiated tissue on the inner wall of the zoœcia opposite their base represents the young bud. Occasionally a very short, flat creeping stolon is produced between two zoœcia.

It is only as regards the zoœcia that it is possible to compare the diagnoses of *Hislopia* and *Norodomia*. The following is a translation of that of the latter :—

"*Zoœcia* horny, creeping, strongly adherent to submerged bodies, originating one from another below the summit to form linear series, primitive axis of the *zoarium* rapidly giving rise to secondary, tertiary and other axes, these appear on a level with the upper third of the zoœcium, sometimes on one side, sometimes on two; lateral *margin* thick, bearing a delicate membranous *area*, near the summit of which is the orifice." (1885).

Allowing for the dried condition of the specimens examined, this diagnosis applies equally well to *Hislopia*. In dried specimens of *H. lacustris* the front collapses below the margins, which then appear thickened, and the tubular character of the orifice is less conspicuous. No mention is made of the four "valves" which close the orifice in *Hislopia*; but they are extremely delicate membranous structures, which cannot be seen in dried specimens. For these reasons I regard *Norodomia* as a synonym of *Hislopia*. Whether Jullien's *N. cambodyiensis* is specifically identical with *H. lacustris*, it is difficult to say; but the author's figures bear a close resemblance to dried examples of the latter.

As regards the polypide of *H. lacustris*, one or two important features may be noted. The lophophore is circular, not horse-shoe-shaped as Jullien's (1885) copy of Carter's figure would suggest. There is no epistome. A folded collar, very conspicuous when the lophophore is in the act of expanding, exists and is well represented by Carter (*op. cit.* pl. VII, fig. 3). When the polypide is retracted, the aperture is closed by what appear on the surface to be four valves. Carter stated, and indicated in his figure, that the posterior of these was larger than the others and had a different character from them; but in the living animal the relative extent of these "valves" is by no means constant, even in the same zoœcium at different times. Their nature is best indicated by a study of the young bud. Before the orifice is actually perforated its lumen is almost circular, the edge is hardly thickened, and there are no spines. At this stage no "valves" can be seen, although the collar, which is very long, may be already apparent. As an opening is formed, and as, simultaneously, its edges become more or less completely rectangular and stiff, the upper extremity of the walls of the orifice, inside the thickened rim, collapse together, and a slight transverse folding takes place, producing what appear on the surface to be regular flaps, although the folding is not sufficiently marked for the projections from the four sides of the orifice to have actually this character. These projections are the so-called valves. In such forms as *Alcyonidium* and *Bowerbankia*, the walls of the orifice close in more or less tightly above the collar when the lophophore is retracted, but no projections of

this kind are formed, the aperture being circular and not having stiffened edges. In *Paludicella*, in which the opening is rectangular but without a thickened rim, the resemblance is much more striking. In *Hislopia* there are no peculiar muscles connected with the orifice, the structure of which is absolutely distinct from that of the Cheilostomes.

The tentacles are, as Carter says, "about sixteen," occasionally a little more numerous; but their number is not constant. When expanded they are long and slender. The pharynx is rather lengthy. Near its point of origin it is swollen slightly; but it becomes cylindrical again before entering the gizzard, which is spherical and bears from two to six greatly thickened ridges on its *internal* surface. The passage between the gizzard and the stomach is capable of some extension and bears peculiarly long and active cilia. The gizzard almost invariably contains a number of rounded green bodies, which appear to be unicellular algæ. Sometimes these bodies remain in the gizzard unaffected for at least two days.

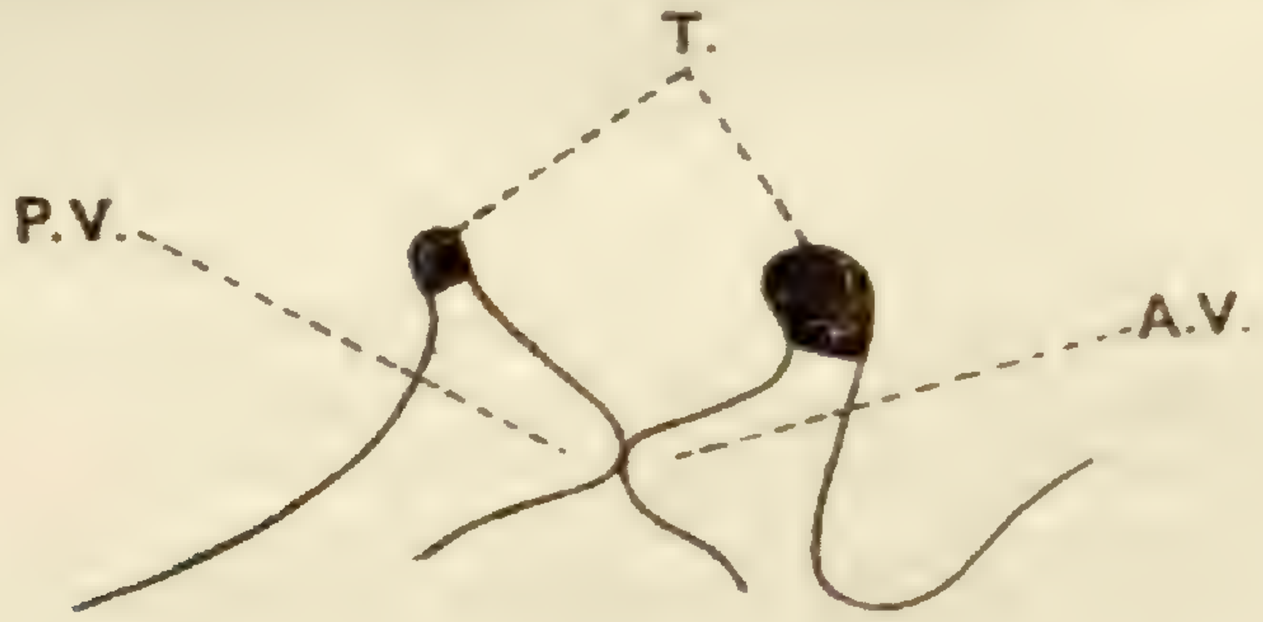

Fig. 2. Diagrammatic longitudinal section of the orifice, the polypide being retracted.

T.=thickened rim. P.V.=posterior valve. A.V.=anterior valve.

Those situated furthest down are in constant motion, being whirled round and round by the cilia in the passage between the stomach and the gizzard. Occasionally a movement of the whole alimentary canal causes some of them to descend into the stomach; but, owing to their spherical shape, the action of the cilia brings them back into the gizzard again. I am inclined to believe that these bodies are merely food which is waiting to be crushed by the gizzard, as some of them are always disappearing and the fæces afterwards are green. If so, the animal is able to save up an excess of food for some time in this manner. The stomach, which has the usual characters, is well represented by Carter; but the intestine is a cylindrical tube when empty. The "globular, sometimes elliptically dilated portion" is merely the temporary swelling caused by the presence of faeces, and several such swellings may occur. The rectum is shorter than the intestine. The anus is, of course, external to the lophophore.

The intertentacular organ is large, and the ganglion appears to be normal. The muscular system is well developed; but I cannot detect a definite funiculus.

The ovaries are attached to the wall of the zoœcium on both sides of the polypide and are of considerable extent Spermaries occur in much the same position, but neither kind of gonad can be said to have any very definite arrangement, although both are found together. Apparently the female elements, as a rule, mature earlier than the male. When the former are ripe a "brown body" is formed and they escape through the orifice, occasionally, at any rate in captivity, as unsegmented ova, but this may be due to abnormal conditions of life.

The exact position of *Hislopia* has hitherto remained uncertain; but I think there can be little doubt that it is a somewhat aberrant representative of the Ctenostomata, the orifice having undergone special modification, possibly in connection with life in fresh water. Probably the genus should be regarded as constituting a distinct family closely allied to the Paludicellidæ.

9. *Some Instances of Vegetable Pottery.*—*By* David Hooper.

Certain vessels are frequently made in India from the dried fruits of trees and used for holding water and liquid substances. Familiar examples are found in the bottle gourd (*Lagenaria vulgaris*), the bel (*Ægle marmelos*), and the cocoanut (*Cocos nucifera*). An aperture is made at one end of the fruit, the pulpy portion is removed by excavation and washing, and the dry, hard shell forms a bottle-shaped vessel which serves many useful purposes.

While many of the poorer villagers in India take advantage of these naturally-shaped vessels, a peculiar use is sometimes made by others of a glutinous and plastic material entirely of vegetable origin which, when formed by the art of a potter into cups, saucers, and jars, and dried in the air, is a substitute for earthenware. There is more than one instance in history of vegetable matter being confused with earth or clay. So long ago as the fifth century, Prosper Alpinus noticed that the powdered pulp of the fruit of *Adansonia digitata*, commonly known as the baoab, was sold as Terra Lemnia to those unacquainted with the original article. The genuine Lemnian earth of the Greeks, or Sphragide, was a yellowish-grey earth or clay found in the Island of Stalimene (ancient Lemnos). It was regarded as a medicine in Turkey, and was esteemed as an antidote to poison and the plague. Another instance of confusion between vegetable and mineral substances is the name Terra Japonica, formerly applied to the extract or cutch of the Uncaria plant, which was supposed to come from Japan. The analogy between cutch and clay is shown by the fact that the former can be readily moulded into figures and vessels which retain their shape when dried in the sun. Dr. Annandale, during his recent visit to Rammad in South India, found the villagers adepts at making toy images of black catechu, and illustrations of their workmanship will be given in a future number of the Memoirs of this Society.

The powdered root of the turmeric (*Curcuma longa*) was another substance formerly regarded as of mineral origin and known as Terra Merita, probably on account of its resemblance in colour to ochreous minerals.

The pulpy parts of various astringent fruits have the peculiar plastic property of clay, and by hardening in the air, after being moulded into pots, they are impervious to water, and have the additional advantage that they can fall to the ground without being broken.

The use of the fruit of the aoula for making pottery was described in 1896 in a letter from Mr. James Martin, written from the Tumgaon District, Raipur, Central Provinces, to the Reporter on Economic Products to the Government of India. He writes:
"I have come across a peculiar ware that is made by the Banjaras
"of the district from the fruit of the aoula (*Phyllanthus emblica*).
"The fruit is collected and dried. It is then boiled in water until
"quite soft and pounded, the stones removed and the pulp beaten

"up and worked with the hands into a thick, dark-brown, sticky "mass. When this is quite ready, the manufacturer takes an "earthen vessel—any shape that pleases him—and covers it all over "with a thick layer or coat of the pulp. This is then put aside to "set a bit, and when hard, rude devices are stamped round the neck "and shoulders of the article, which is then set aside to dry. "When quite hard, the *gharra* inside is broken and the pieces "removed. These vegetable pots are sold according to size from 4 "annas to 8 annas each, and are much sought after by the people "of the place. Oil and ghee stored in them are well preserved "and show no evidence of rancidity."

In another letter, Mr. Martin describes the process in greater detail: "I sent for some Banjaras and got them to stay for four or "five days at my camp and prepare, in my presence, first the pulp of "the *Phyllanthus emblica* fruits, and then saw them mould and "form the jars in the various stages of the process. On the first "day I sent the men to collect fruit and they brought in a large "basketful. The same evening this was put into large mudden (?) "*gharras* with cold water sufficient to cover the fruit, placed over "fires and boiled till soft. The *gharras* were then removed and "the contents emptied into a basket and allowed to drain and cool. "On the following morning, the fruit was broken by hand, each "into five or six pieces, the fleshy pericarp dividing easily into "sections, the stones as they were removed were thrown aside, and "the fruit, spread on a mat, was placed in the sun to dry. The "day after, the *gharras* were three parts filled with cold water and "placed over fires. As soon as the water boiled, the previously "boiled and dried fruit was added and allowed to cook till soft "again. The vessels were then taken from the fires and all liquor "carefully drained off. This was kept in a separate vessel for "future use. A small quantity at a time of the fruit was next "taken and reduced to a paste on a stone slab with a muller, a "little of the fruit liquor being added to keep the pulp soft and of "a suitably plastic consistence. The moulds—in this case small "earthenware *gharras*—were next attended to. The outside surface "of these was first carefully washed, and then coated with a paste "composed of ashes of burnt cowdung and the fruit liquor, and set "aside to dry. When all was ready, the fruit pulp in small quanti- "ties, as much as could be manipulated by one hand, was taken and "dubbed on with the right hand, the operator holding the mould "in his left.

"He commenced by covering the mould round the neck and "then worked downwards finishing off at the bottom, spreading "and smoothing the coat with his hand, which he every now and "again dipped into the fruit liquor. When the entire surface was "covered with pulp about ¼ inch thick, the mould was stood (?) neck "downwards on the ground in the sun to dry. It was left there all "day but brought in at night On the following morning a second "coat of pulp was plastered on as before, and the pot was again "left out all day in the sun, being removed at night. On the third "day, after having stood in the sun all day, the earthen moulds

"were broken by being tapped with a stone inside, and the pieces "removed. The necks of the jars thus formed were then moulded "by hand with the addition of more pulp, and then the entire jar "both inside and out was smoothed and finished off with a coat of "pulp thinned down with the fruit liquor, after which the jars were "again set aside to harden. When hard enough to handle—which "was by evening—an attempt was made at ornamenting the neck of "the jar by impressions left by pressing a thin round stick against "the yet soft and yielding pulp. Kowrie shells and the red seeds of "*Abrus precatorius* are often imbedded in pulp round the neck to "beautify it. The Banjaras declare that the manufacture is stopped "during the rains."

The aoula tree is very abundant throughout the forests of tropical India and Burma, and the fruits, known as Emblic Myrobalans, are frequently employed in medicine and for tanning. The advantages which the fresh pulp possesses for preparing vessels might well be recommended for more extensive trial, and probably the fruit of the gab (*Diospyros embryopteris*) could be similarly utilised.

Another material used in making jars is the root of the great asphodel (*Eremurus aucherianus*, Boiss.) The fleshy root of this plant, by drying in a sand-bath and grinding, is prepared into a flour which, when mixed with hot water, yields a most tenacious vegetable glue with which the Persians make great vessels for holding oil and clarified butter The native cobblers employ it in preference to animal glue in their work. Dr. J. E. T. Aitchison describes [1] the method of making these vessels in Persia: "The "tenacious gum is painted over a hollow earthen mould that has a "single layer of some coarse country cloth covering it; on this "cloth, layer after layer of the glue is painted until a sufficiency is "reached; this forms, when dry, a parchment-like skin, the mould "is then broken up and removed through the mouth of the jar, "and then usually the jar is sewed into a goat's hair sack. With "ordinary moisture, or the amount of moisture likely to affect the "jar through the goat's hair covering, no harm is likely to accrue, "but if the jar is allowed to stand in water for days, it will in time "dissolve or melt away."

Sarish-i-narm is the name of the flour made by grinding down the dried roots of *Eremurus* with the intention of converting them into glue. *Sarish-i-kaki* is the vegetable glue ready made for use. *Daba-i-sarish* are the vessels made in the above manner. There is said to be a large trade in this material in Khorasan.

[1] *Notes on Products of Western Afghanistan and North-Eastern Persia*, p. 66.

10. *Notes on some Sea-Snakes caught at Madras.*—*By* T. V. R. Aiyar.

Communicated by H. Maxwell Lefroy.

The almost unbroken coast of the port of Madras extending from Cassimode on the north to Mylapore in the south, seems to afford but little shelter to these marine reptiles, the favourite haunts of which are salt-water estuaries and tidal streams. They are said to be found in shoals along the Burmese coast near the mouths of the river Irrawadi and the Sunderbunds of Bengal. However, with all its disadvantages as a locality in which to carry on such an investigation as this, I was able to procure from the Madras coast a fairly good number of specimens during the comparatively short period of my work. Of the specimens collected, the majority were got along the rock-bound coast of Royapuram and from within the artificial harbour, where young ones are often found swimming in their characteristic fashion.

There seems to be no particular season of the year when sea-snakes are found; all the year round hardly a day passes without some fisherman coming across specimens of these snakes. During the cold weather, however, *viz.*, from the month of October to February, they are found in greater numbers. Big snakes generally approach the shore at night and this fact is corroborated by the experience of the fishermen who often fish at night. During the rainy weather when the sea is rough, many of them are dashed ashore and found stranded on the beach, when they easily become a prey to the eager sea-gull, which I have seen eating them.

Sea-snakes are generally hauled up in the big fishing nets employed by the Madras fishermen in the mid-bay. Among the various undesirables which the net raises up, as urchins, corals, sea-stars, etc., at each drawing of the net, sea-snakes invariably come up, and unless anyone interested in these succeeds in prevailing upon the fisherman to retain these snakes, they are thrown overboard with the rest of the useless lot. With their natural hatred and vulgar antipathy towards these reptiles, it requires no ordinary promises of presents to induce these illiterate men to fetch home specimens of snakes. Sometimes a fisherman, induced by payment to catch them, brings big eels and specimens of *Chreshydrus granulatus*; and on being told that they are not the right creatures wanted, he loses his confidence in the offer and gives up collecting them.

A few general observations may be recorded as regards habits and other features which I have been able to make during a recent investigation.

The peculiar habits and surroundings of some of the species have been found to have brought about several marked variations in the general form of the body. The most striking of these is the peculiar modification of the anterior portion of the trunk in some species of *Hydrophis*. It may be suggested that the small

head with the attenuated and cylindrical neck is specially adapted to penetrate into the crevices and crannies among the rocks in search of prey. It may also be urged that the modification serves the purpose of an offensive organ also, inasmuch as the prey could be easily caught and poisoned by an agile dart of the anterior portion, without the thick belly exerting itself much. The graceful *Distira viperina* Bouleng. with its unique ventrals adapted to a slightly regular motion on land, is, I think, a shallow water form often crawling along the sandy bottom of the littoral area. I have seen specimens crawling on the sand after being caught.

With regard to coloration, the young ones are, as a rule, found gracefully adorned with bright bands and streaks, while as the snakes grow old the colour becomes dull and the bands, streaks, and other markings appear very faint and sometimes even disappear. This is especially the case in *Enhydris curtus* Merrem., *Enhydrina valakadien* Russell, *Distira cyanocincta* Russell, and *Hydrophis cantoris* Günth. The arrangement and number of the head shields and scales which are taken as the criteria in determining the specific characters are, in many cases, found to be very variable. In almost all the species described above, the number of scales vary from those given by Mr. Boulenger in his descriptions.

Though one and all the species are poisonous, the poison fangs are not so very well developed as in terrestrial snakes. They are small and not markedly differentiated from the maxillary teeth behind them. In one species, however, *viz.*, *Enhydrina valakadien*, they are comparatively larger. The terminal end of the poison duct in these snakes is found to be very convoluted. The fangs being small, the puncture caused by the bite must be very minute; nevertheless the effect of the bite from a toxicological point of view, is said to be very deadly. Some of the most eminent medical men,[1] who have been recently conducting a research into the action of snake venoms, have found out that the most deadly of all substances of this nature, which they have examined, is the venom of the sea-snake *Enhydrina valakadien*. The native fisherfolk are not unaware of the poisonous nature of these snakes; in spite of this knowledge they are always found carelessly playing in the waters, even of localities which are said to be the special haunts of sea-serpents. And it is none the less curious to note, that cases of bites by sea-snakes are very rarely heard of; evidently they attack man very seldom. Here is what one observer[2] says: "Although all these are poisonous, they rarely attack man. I have seen scores taken by careless sailors on the north-west coast of Australia without any bad results. Several instances of fatal bites have been recorded, one having caused death in an hour and a quarter." A case of fatality by

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[1] L. Rogers in Proc. Roy. Soc. lxxi. (1903), p. 481 and lxxii. (1903). p. 305; Sir Thomas Fraser and R. H. Elliot, in Phil. Trans. Roy. Soc. B. 197. (1904). p. 249.

[2] Basset Smith, M.R.C.S., R.N.

sea-snake bite came to my notice during my investigations. A fisher-boy was bitten by a slender-necked species while on a catamaran in the bay, at the Royapuram coast. The boy did not feel the bite, though he knew it was a snake, but gradually became pale and unconscious. He was brought ashore, at once and all sorts of restoratives and handy medicines were resorted to, but the boy expired in the course of the next day. The natives regard the species *Hydrus platurus* Russell as the most deadly of all sea-snakes, next in grade being the slender-necked forms to which they give the name of *Molagadien pāmb.* Implicit faith in the curative effects of sacred murmurs and chantings is entertained by almost all fishermen. An experiment in the way of mutual poisoning was tried by making the jaws of a healthy living specimen of *Enhydris curtus* close on the body of a young specimen of *Enhydrina valakadien* which was very active at the time. For some time the latter exhibited no sign of poisoning or ill-health, but the next day it became paralysed and died. This killed one had been living for a long time in captivity, and was apparently healthy when bitten.

In the matter of food, all these snakes more or less confine themselves to a diet of fish. Of all the species, *Enhydrina valakadien* seems to be the most voracious. In almost all the specimens of the species that were opened, several fish, half digested, were found, the fishes being chiefly spiny ones. In some cases small crustaceans were also found in the alimentary tract. The slender-necked species, which cannot swallow big fishes, are found to feed on young and small fish. I am also inclined to think, that these snakes haunt coral reefs and feed on the minute polyps.

Female specimens, with their oviducts crammed with well-developed eggs, were chiefly found during the cold months from October to January.

The peculiar way in which the ecdysis of the epidermis takes place in these marine reptiles is well worth a note. Unlike the terrestrial snakes which periodically shed their skin as a single piece, these snakes have the habit of casting away the epidermis piecemeal. Consequently a thorough moult takes longer time than in ordinary land forms. During the period of moulting, the snakes are found to be very inactive. It seems to me a mystery why such a method of ecdysis should be the rule in these marine snakes. The following feature which I observed, however, makes me hazard the conjecture that the sea-water may play a part in this process of piece-by-piece moulting. Some specimens of sea-snakes, which I had kept in captivity in fresh water, underwent this process of moulting more or less like the land snakes, the epidermis coming off almost as a single piece.

Several specimens of the snakes collected, especially young ones, had foreign organisms attached to the surface of their body. The chief of these organisms are the barnacles, both the stalked and the sessile forms (*Lepadidæ* and *Balanidæ*). These were abundantly found in young specimens of *Enhydrina valakadien*. In a specimen of *Enhydris curtus* the body was completely

fringed with hydroid colonies like grass. A specimen of *Distira viperina* was found to have attached to its body the calcareous skeleton of a polyzoon colony (*Membranipora ?*).

The way in which sea-snakes behave when thrown ashore, and their habit while in captivity, are not uninteresting. Once out of their native element, they generally become quite helpless and appear blind, except *Distira viperina*. They are unable to progress on land because of the want of big ventrals. None of these ever attempted to attack, but they often try to bite and injure their own bodies. I tried to feed some in captivity, but with very little success. Dr. Fayrer says that they die very rapidly in captivity, but I was able to keep some alive in captivity for a fairly long time. A specimen of *Enhydrina valakadien*, 1′ 6½″ long, lived in fresh water from the 12th of September to the 9th of November, which is nearly two months. One specimen of *Enhydris curtus*, a foot long, lived from the 19th September to the 12th October,—nearly a month. Another specimen of the same species 2′ 9″ long, lived for nearly 20 days, *viz.*, from the 26th December to the 15th January. A specimen of *Distira jerdonii* Russell, 3′ 2½″ long, lived from the 9th November to the 14th January. All these were kept in open tin buckets half full of fresh water, the water being changed now and then. Other species were also tried, but none lived any appreciable time in captivity. In captivity all were active and quite at home, and it was probably starvation that killed them, since they refuse to feed in captivity.

Here is a list of some of the Tamil names by which sea-snakes are known in Madras:—Nulla Wahlagille pam of Russell is called *Karivāla pāmb*. Species of Enhydris are called *Putta pāmb* (meaning blind snake). E. valakadien is called *Vālakadien pāmb* (meaning the net-biting snake). The slender-necked ones are called *Molakadien pāmb*: also *Kadal nagom* (meaning sea-serpent). The long and banded ones are called *Kadal sarai pāmb*.

11. *Wormia Mansoni: a hitherto undescribed species from Burma.* —*By* A. T. Gage.

In May 1905, Mr. F. B. Manson, now retired from Government service but then Conservator of Forests, Tenasserim Circle, sent to the writer a species of Wormia, which could not be identified with any species in the Herbarium of the Royal Botanic Garden, Calcutta. More material of the same species was sent in the following July and September by Mr. Manson's successor. This allowed of a fairly complete description of the species being drawn up, which is given below.

The writer is indebted to Colonel Prain and Mr. J. F. Duthie for having kindly compared the species with the Wormias in the Kew collection, with none of which has it been found to agree.

Wormia Mansoni.—Frutex primo cum foliorum nascentium costis costulisque subtus pilosis denique omnino glaber; ramuli teretes brunnei lenticellati. Folia alterna, breviter petiolata, sine ala stipulari, elliptico-lanceolata, apice acuta, basi cuneata, serrata, coriacea, supra nitida, infra surda, nervis lateralibus 12—15. Petiolus 1—1·4 cm. longus; lamina 13—16 cm. longa, 4·5—6·5 cm. lata. Flores 4—5 cm. lati, in racemis terminalibus 3-4 flores gerentibus dispositi, alabastro in bractea decidua incluso. Pedunculi 2—3 cm. longi. Sepala 5, in alabastro imbricata, carnea, ovato oblonga, tria interiora circa 1·7 cm. longa, 1·5 cm. lata, duo exteriora minora. Petala 5—7, alba, undulata, integra, obovata, 2—3 cm. longa, 1 cm. lata, in alabastro imbricata. Stamina numerosa, 7—10 mm. longa, filamenta fere aequalia 3-serialiter disposita, antheris per ostia terminalia dehiscentibus. Carpella 5 raro 6, subtrigona, vix in axe cohaerentia, staminibus obtecta; stigmata tot quot carpella, subulata, reflexa; ovula numerosa bi-serialia axillariter disposita. Fructus 2—2·5 cm. crassus; carpella maturescentia 2—3-sperma, carnea, haud intorta, vix cohaerentia, basi staminibus persistentibus cincta et calyce carnea persistente inclusa. Semina reniformia, fusco-brunnea, rugulosa, 5 mm. longa, 3 mm. lata, in arillo (albo?) tenaci inclusa.

In ripis fluminis Yunzalin, prope confluentem cum Salween, **Tenasserim**, *Manson!*

Up to the present the species of the Eu-Wormia section, found in Ceylon and the Malayan Peninsula, which have been described are:—*Wormia triquetra* Rottb., Flora Brit. Ind., i. 35, from Ceylon; *W. pulchella* Jack, Flora Brit. Ind., i 36, *W. meliosmæfolia* King, *W. Scortechinii* King, *W. Kunstleri* King, Journ. Asiat. Soc. Bengal, lviii. II, 365-366, all from the Malayan Peninsula. The present species, which extends the distribution of the genus northwards into Burma, is readily distinguishable from those just mentioned *W. triquetra*, *W. Scortechinii* and *W. Kunstleri* are trees, the two latter at least 20 metres high, while *W. Mansoni* is a shrub. *W. meliosmæfolia* is described as a small tree, and *W. pulchella* as a shrub. The former differs from *W. Mansoni* in having 12 carpels, the latter in having obvate-oblong entire leaves with only 5-7 pairs of nerves.

12. *Testudo baluchiorum, a new species.*—By N. Annandale, D.Sc., C.M.Z.S., *Deputy Superintendent of the Indian Museum.*

Diagnosis of *Testudo baluchiorum*, sp. nov.

Shell arched transversely and longitudinally, slightly more than half as deep as long; anterior margins slightly reverted, serrated; costals almost vertical. Head small, broad, covered with irregular scales above; interorbital region of the skull almost flat, but sloping a little towards the nasal opening; upper jaw tricuspid, feebly serrated; occipital process short, barely extending beyond the condyles. Four claws on each foot; the fore-foot with about six rows of large imbricating scales on the anterior surface; the hind foot with three spur-like tubercles on the heel; two large subtriedral tubercles, surrounded by smaller ones, on the back of the thigh. Tail short, with a small apical tubercle. Shields of carapace concentrally striated, with a flat sculptured central area; supracaudal single, almost vertical. Plastron truncated in front, probably notched deeply behind. Colour of shell pale brown, irregularly marbled with darker brown.

Locality.—Baluchistan (*A. W. Murray*). A stuffed specimen in the Indian Museum, identified by Anderson as *T. horsfieldii.*

Remarks.—This species may be distinguished from the Afghan Tortoise (*T. horsfieldii*), the only other species of its genus with four claws on all the feet, by its deeper carapace, which is not flattened on the dorsal surface, and by the characters of its skull. In *T. horsfieldii* there is a marked transverse depression across the interorbital region and the sides of the upper jaw are smooth. The new species resembles *T. zarudnyi* Nikolski in several of its characters, notably in its almost vertical costals The description of the latter Tortoise, described from Eastern Persia and possibly occurring in Baluchistan, is given below.

As it seems probable that the type of *T. baluchiorum* is abnormal in certain respects, I have given a very brief and guarded diagnosis of the species it represents. The anals are almost entirely absent, being represented by several small, irregularly shaped tubercles, which separate the femorals from one another at their anterior extremity. There is no evidence that this is due to injury, as the place where the missing plates should be is covered with normal and apparently healthy skin.

Dimensions of the Type of T. baluchiorum.

Length of shell	...	...	211 mm.
Depth „ „	...	...	111 „
Breadth „ „	...	...	160 „
Length of skull	...	...	35 „
Maximum breadth of skull		...	30 „

For comparison the diagnosis of *Testudo zarudnyi* Nikolski is appended. It is quoted from Nikolski's paper in the *Annuaire du Musée Zoologique de l'Académie, St. Pétersburg*, 1897. I am

much indebted to Mr. G. A. Boulenger, who has sent me a copy of this paper on loan.

"*Testudo* affinis *Testudini iberæ* Pall., a qua carapace lateribus compressa, scutis margino-lateralibus perpendicularibus, supra non visis, scuti margino-brachialis anterioris margine inferiore valde assurecta, unguibus brevibus obtusissimis, rhinotheca distincte denticulata, differt.

Testudo, latitudine carapacis in media parte 1·5 in ejus longitudine; margine ejus posteriore expanso, parum assurrecto; marginibus scutorum margino-femoralium, incissura magna inter se discretorum, rotundatis; margine scuti margino-brachialis anterioris valde assurrecto, supra posticeque spectante; scuto nuchali elongato, ensiformi; scutis margino-collaribus supra duplicibus; scutis margino-lateralibus perpendicularibus, supra non visis; scuto supracaudali indiviso, sub angulo 45° ad planitiem horizontalem posito, longitudine ejus scuti longitudini scuti vertebralis primi aequali; margine anteriore scuti vertebralis primi rotundato, nec angulato; latitudine omnium scutorum vertebralium longitudinem corum multum superante, latitudini scutorum costalium fere aequali; margine posteriore plastronis inciso, ad suturam inter scuta femoralia et abdominalia mobili; margine anteriore plastronis inciso, sutura inter scuta analia cum sutura inter scuta femoralia multum quam sutura inter se abdominalia breviore, scutis axillaribus unguinalibusque parvis angustis, sutura inter scuta brachialia dupla quam inter pectoralia longiore, scutello praefrontali duplici; rhinotheca distincte denticulata; pedibus anterioribus antice scutis latis rotundatis imbricatis 5 series longitudinales et 6 transversales finctis, tectis; longitudine horum scutorum distincte quam latitudine eorum minore, tubere magno corneo subconico in femoris parte posteriore; unguibus brevibus obtusissimis, longitudine longissimi unguis oculi diametrum longitudinalem aequante, vel paulo superante, latitudine unguium vix $1\frac{1}{2}$ in eorum longitudine; cauda tenui, longa, longitudine ejus longitudinis capitis majore, scutellis caudalibus dilatatis deplanatis quadrangularibus vel pentagonalibus, 6-8 circum caudam dispositis; carapace lateribus flavescente, macula nigra in scutorum costalium tuberibus ornata; margine anteriore carapacis, scutis vertebralibus nigricantibus, scutis margino-lateralibus nigro-marginatis, plastrone flavescente nigro-notato; scutis pedum anteriorum flavescentibus, anguste nigro-marginatis, unguibus palmarum flavescentibus plantarum nigricantibus.

Longitudo carapacis 254 mm.

Habitat in montibus provinciae Birdschan in Persia orientali."

PRINCIPAL PUBLICATIONS OF THE SOCIETY.

Asiatic Researches, Vols. I—XX and Index, 1788—1839.
Proceedings, 1865—1904, (now amalgamated with Journal).
Memoirs, Vol. 1, *etc.*, 1905, *etc.*
Journal, Vols. 1—73, 1832—1904.
Journal and Proceedings, [*N. S.*] Vol. 1, *etc.*, 1905, *etc.*
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(*c*) To introduce visitors at the Ordinary General Meetings and to the grounds and public rooms of the Society during the hours they are open to members.

(*d*) To have personal access to the Library and other public rooms of the Society, and to examine its collections.

(*e*) To take out books, plates and manuscripts from the Library.

(*f*) To receive *gratis*, copies of the *Journal and Proceedings* and *Memoirs* of the Society.

(*g*) To fill any office in the Society on being duly elected thereto.

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Lagenaria vulgaris.
Cocas nucifera.
Adansonia digitata.
Cureuma longa.
Phyllanthus Emblica.
Aegle Marmelos.

} Used in preparation of pottery, by D. Hooper, Calcutta Journ. and Proc. As. Soc. Beng., Vol. II, No. 3, 1906, pp. 65–67.

Eremurus anchierianus, Boiss.

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APRIL, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 4th April, 1906, at 9-15 P.M.

E. D. Ross, Esq., Ph.D., in the chair.

The following members were present :—

Dr. N. Annandale, Mr. I. H. Burkill, Babu Monmohan Chakravarti, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Babu Amulyacharan Ghosh Vidyabhushan, Mr. H. G. Graves, Mr. T. H. Holland, Mr. D. Hooper, Mr. A. H. Lewes, Dr. M. M. Masoom, Lieut.-Col. D. C. Phillott, Rai Bahadur Ram Brahma Sanyal, Pandit Yogeśa Chandra Śastree-Sankhyaratna-Vedatirtha, Babu Chandranarain Singh, Pandit Pramatha Nath Tarkabhushan, Pandit Vanamali Vedantatirtha, Pandit Rajendra Nath Vidyabhusan, Mahamahopadhyaya Satis Chandra Vidyabhushan, Mr. E. R. Watson, Rev. A. W. Young.

Visitors :—Mr. G. F. Abbott, Babu Hem Chandra Das-Gupta, Mr. D. W. K. Hamilton.

The minutes of the last meeting were read and confirmed.

Thirteen presentations were announced.

It was announced that the Hon. Mr. Justice F. E. Pargiter, and Major P. R. T. Gurdon, I.A., had expressed a wish to withdraw from the Society.

Rev. A. H. Phillips, proposed by the Rev. A. W. Young, seconded by Mr. D. Hooper ; Mr. L. D. Petrocochino, proposed by Mr. J. Macfarlane, seconded by Lieut.-Col. D. C. Phillott ; Mr. Evan Mackenzie, proposed by Miss Flora Butcher, seconded by Dr. E. D. Ross ; and Mr. M. Krishnamachariar, proposed by Pandit Yogesa Chandra Śastree-Sankhyaratna-Vedatirtha, seconded by Mahamahopadhyaya Satis Chandra Vidyabhushan were ballotted for and elected Ordinary Members.

Dr. E. D. Ross read the following report on the search for Arabic and Persian MSS. for the official year 1905-06 :—

Annual Report of the Search for Arabic and Persian MSS., 1905–6.

In submitting the following report I have to state at the outset, that I have adopted three principles in carrying out the duties of the research work entrusted to me by the A.S.B. :—(1) to take notes of all the important works in Indian libraries both public and private ; (2) to purchase valuable MSS. ; and (3) to procure transcripts of rare works.

I. THE RAMPUR LIBRARY.

In connection with the first item, I this year paid a visit to the Rampur Library which is one of the finest libraries in this country and one of which India may well be proud. The collection owes its inception to the learned Nawwáb Muhammad Faḍ-ul-Lah of Rampur, but the greater part was bought together in the time of the late Nawwab Kalb 'Ali Khán, who was a great patron of learning. He also removed the books from the Toshakhana to the present Library which he had built at a cost of forty thousand rupees. There are in all 8,494 volumes of Arabic and Persian works in manuscript, print or lithograph, of which about 5,000 belong to the first category.

Out of this number upwards of three hundred represent very scarce works; 347 are distinguished for their beautiful penmanship, and no less than forty are authors' autographs. The oldest dated book is كتاب النكت والعيون (*Kitab-un-Nukat-wal-'Uyun*), a commentary on the Qurán. This copy was made in A.H. 557. The author of the book, Abu'l Ḥasan 'Ali b. Muhammad b. Ḥabíb al Máwardi, died in A.H. 450. Besides, being an old copy, the work itself is rare, no copy being mentioned in any of the catalogues I have consulted. Brockelmann, in his admirable work Geschichte der Arabischen Litteratur, p. 386, gives the names of some nine books written by this author, but he does not mention this particular work. An interesting anecdote about this author's compositions is given in histories. On his death-bed he said to one of his friends:—

"When I am on the point of death, take my hand into yours. "If I press your hand it will indicate that my works have not met "with the approval of Almighty God, so you may take them "out of the place, where they are now secretly hidden, and throw "them into the river. But if I do not press your hand then take "it for granted that my productions have been approved by the "Almighty, and do your best to propagate them."

It so happened that the hand of the 'Allámah remained steady to his last breath and, consequently, his friend did all he could for the publication of his works.

Another very interesting work—of which no other copy appears to exist—is *at-Taisír fi 'Ilm-it-Tafsír* by Abu'l Qásim 'Abd-ul-Karím b. Hawázin Al Qushairi, who died in A.H. 465. It is dated A.H. 679.

I give below a list of some of the oldest-dated MSS. belonging to this library.

	Book.	Author.	Date of transcription.	Remark.
(1)	Gharíb-ul-Lughat.	'Alí b. 'Omar ad Dáraqutni d. 385-995.	A.H. 566.	No copy in Europe.
(2)	Amṣálus Sá'irah	Abú Ubaid al Qásim b. Salám d. 223-837.	A.H. 574.	Common.

(3)	al Maiser.	Abul Ḥasan 'Alí b. Md. al Bazdaví d. 400-1009.	A.H. 590.	No copy in Europe.
(4)	Díwán-ul-Ḥádirah	Qoṭba b. Aús al Ḥádira.	A.H. 629	For other copies see Bk. p. 26.
(5)	Díwán-ul-Fityán	Abú Muḥammad Fityán b. 'Alí b. Jamál-ud-Dín al Asadí an Naḥví. d 560, 1164.	A.H. 623	No copy in Europe.
(6)	Al Mustau'ab	Abu 'Abd-Ullah Muḥammad b. 'Abd-Ullah as-Sámirí al Ḥanbalí.	A.H. 693.	No copy in Europe.

II. PURCHASE OF MANUSCRIPTS.

The total number of MSS. purchased in the year 1905 was 657. They have been procured from different parts of India such as Delhi, Bombay, Hyderabad, and specially from Lucknow. In addition to this we were fortunate enough to purchase two Collections of MSS., which had been brought to us this year by two Arab travellers. These Collections contain some very rare and old MSS. The majority of the MSS. are in Arabic. Our Persian Collection does not contain more than 105 books. The following classified list will show the number of books under each subject:—

Commentaries on the Quran	30
Tradition	88
Law	75
Zaidi Law	20
Sufism	75
Ethics	61
Medicine	31
Literature	67
History and Biography	12
Science	46
Rhetoric	13
Dictionary	8
Principles of Jurisprudence...	25
Science of Controversy	9
Law of Inheritance	10
Miscellaneous	49
Grammar	38
	657

[1] B.K. I. 106.

The following facts in connection with this year's collection are worthy of mention:—

(1) Out of the total number of books purchased we have some eighty MSS. which are unique. Many of these being the works of ancient or modern authors which are not even mentioned in European catalogues.
(2) In about one hundred cases the dates range from A.H. 635 to 900.
(3) There are some sixteen autograph copies of the authors such as 'Alí b. 'Abdul Káfi as Subkí, d. A.H. 756, A.D. 1355; Muḥammad b. Uṣman al Khaiílí, c. A.H. 751, A.D. 1350; Abd-ur-Rá'úf al Munáwi, d. A.H. 1031, A.D. 1621.
(4) About half a dozen of our MSS. bear upon them some lines from the pen of such eminent scholars as Yúsuf b. 'Abdur Raḥman b. Yusuf al Mizzi, d. A.H. 742, A.D. 1341; Aḥmad b. 'Ali 'Asqaláni. d. A.H. 852, A.D. 1448; Aḥmad b. Muḥammad al Qusṭaláni, d. A.H. 923, A.D. 1517.
(5) And there are about half a dozen MSS. which bear the original corrections and marginal notes of the authors themselves.

Among the most interesting additions to our collection are the following:—

(1) Al Katíbat-al-Káminah by Muhammad b. 'Abd-ul-Lah Lisán-ud-Din ibn ul-Khatìb, the Spanish vezir, d. A.H. 713, A.D. 1313. It is an unique copy in Maghribi hand and contains the biographical notices of all the Moorish poets of the 8th Century Hijri.
(2) The rough draft of the valuable work entitled Kharídat ul-Qasr by Kátib al Isfaháni, d. A.H. 597, A.D. 1201; dealing with the biographical accounts of the poets of 'Iráq, Shám, Misr, Jazira and Maghrib who flourished from A.H. 500 to A.H. 592.
(3) Tuḥfat-ul-Ashraf by Yúsuf b. Abdur-Raḥman b. Yúsuf al Mizzi, d. A.H. 742, A.D. 1341. This book enumerates all the traditions and sayings of the Prophet related by the Companions of the Prophet; arranged in such a manner that one can easily know at a glance how many traditions have been referred to each traditionist.
(4) An unique autograph copy of al-Ikhtisár wat-Tajríd by Muhammad b. 'Uṣman b. 'Umar al-Khalíli, dated A.H. 728. It is a digest of the two most important and authoritative books on Hadíṣ or Tradition.
(5) A rough draft of Maqáṣid-ul Ḥasanah by Muhammad b-'Abd-ul-Báqi az-Zarqain dated A.H. 1099, A.D. 1688, a unique work containing the known traditions of the Prophet arranged in alphabetical order.
(6) History of the battle of Siffin by Naṣr b. Muzáḥim. The author belongs to the Second Century of the Hijra and

he is one of the earliest Shí'ah writers. No copy of this book exists in Europe.

(7) Itháf-uz-Zaman by Muhammad b. 'Ali b. Fazl aṭ-Ṭabari ash-Sháfa'i. It contains a chronological history of the successive Sharifs of Mecca from the time of the Prophet down to A.H. 1141.

(8) Tadkirat-ul-Fuqahá by Hasan b-Yusuf b-Ali b-al-Muṭahhar al-Ḥilli, d. 726-1326, dealing with Shi'ah Jurisprudence on an extensive scale in three big volumes. This rare work is not found in any European Library.

(9) The commentary on the well-known Tafsír al-Kashsháf by Maḥmúd b-Mas'úd ash Shirázi, d. 710–1310. Although two copies of the work exist, one in Paris and the other in Aya Sofia in Stambul, it is very rare in India.

(10) The Persian translation of the famous Arabic work Khulásat-ul-Wafá by Samhúdi, d. 911–1505, entitled Akhbār-i-Ḥasínah. It contains a general history and topography of Madínah.

(11) Rubáb Namah or Maṣnavi-i-Walad by Sulṭan Walad (son of Jalál-ud-Din Rúmí, the greatest Sufi Persian poet) d. A.H. 712, A.D. 1312. It is partly in imitation of the Maṣnavi of Ḥakím Saná'i (d. 545–1150) and partly of the Maṣnavi of his father Jalál-ud-Din Rúmi (d. 672–1273). It is in two separate parts. This MS. is in the hand-writing of the author's grandson 'Uṣmán b-'Abd-ul-Láh b.-Walad, copied in 718 A H, 1318 A.D., only six years after the death of the author.

(12) A valuable copy of Nafaḥát-ul-Uns by Jami d. 898–1492, bearing the seals of the Emperors of Delhi and the handwriting and signature of Bairam Khan. Copied in A.H. 902, only four years after the death of the author.

(13) Masálik wa Mamálik by Abul Ḥasan Ṣá'id b-'Ali al-Jurjáni, d. 881–1476. A Persian treatise on geography, dated 920 A.H.

III. TRANSCRIPTS OF RARE MSS.

The last item of business in my programme was to get rare MSS. copied for the Society.

I procured in all ten transcripts, among which may be mentioned the following rare works on Medical Science by Galen.

(1) Taḥrím-ud Dafn, in which the author forbids the burial of a dead body within 24 hours after death.

(2) Manáfi'-ul-A'ḍá, on the respective utilities of the limbs of the body.

(3) Kitáb Uglúqan, a book on diagnosis, written at the request of a Greek philosopher Uglúqan (literally the blue-eyed).

(4) Kitáb-ul-Agdiyah wal Aṭ'imah, on nutrition and food.

It will not be out of place to mention that I commissioned Shams-ul Ulama Maulavi Atawar Rahman, who was proceeding on a pilgrimage to the Hijaz, to keep a lookout for ancient Arabic MSS. in that country. But I regret to say the Maulavi met with no success : for all the books offered to him for sale were well-known works and of recent transcription.

In conclusion I desire to express my high appreciation of the valuable assistance which I have received throughout the year from Moulvi Hidayat Husein, the first travelling Maulavi. Without his enthusiastic zeal, his untiring industry, and his quick intelligence, it would have been impossible for me to submit to the Council such a satisfactory report.

Rai Ram Brahma Sanyal, Bahadur exhibited a melanoid variety of *Sturnopastor contra*, Hodg., the common Pied Starling. He remarked that although individuals of the species vary a great deal in shades of colour, a uniformly black specimen is rarely seen. About forty-five years ago Tytler observed a caged specimen of uniform black colour, which he described as *Sturnopastor moorii*. As far, however, as it is known, Blyth disagreed with him, and considered the bird to be a variety of *Sturnopastor contra*. It may be interesting to note in this connexion that uniformly white specimens of Pied Starlings, like white or partially white bulbuls and common barbets (*Thereiceryx zeylonicus*) are not at all uncommon. *Sturnopastor contra* inhabits the plains of North-Western India including the Nepal and Sikhim Terai, extending eastwards to Assam and Cachar and south to Madras.

The following papers were read :—

1. *Gyantse Rock Inscription of Choi-gyal-gmyis-pa, a ruler under the Sakyapa Hierrarch in the 14th century A.D.*—*By* Mahāmahopādhyāya Satis Chandra Vidyābhūṣhaṇ, M.A.

2. *Notes on the Freshwater Fauna of India.*—*By* N. Annandale, D.Sc., C.M.Z.S. *No. 3.*—*An Indian Aquatic Cockroach and Beetle Larva. No. 4.*—Hydra orientalis *and its relations with other Invertebrates.*

3. *Notes on "Pachesi" and similar games, as played in the Karwi subdivision.*—*By* E. de M. Humphries.

4. *On the Hindu Method of Manufacturing Spirit from rice, and its scientific explanation.*—*By* J. C. Ray. *Communicated by* Dr. P. C. Ray.

5. *Silver dioxide and silver peroxynitrate.*—*By* E. R. Watson, B.A., B.Sc.

6. *Persian Proverbs collected from dervishes in the South of Persia.*—*By* Lieut.-Col. D. C. Phillott, *Secretary to the Board of Examiners.*

This paper will be published in the *Memoirs.*

7. *Notes on the Sikandar-Nāma of Nizāmi.*—*By* Lieut.-Col. D. C. Phillott, *Secretary to the Board of Examiners.*

Library.

The following new books have been added to the Library during March, 1906 :—

Buckland, C.E. Dictionary of Indian Biography. *London*, 1906. 8°.

Calcutta Directory and Guide, 1906. Compiled by E. T. McCluskie. *Calcutta*, 1906. 8°.

Presd. by Mr. E. T. McCluskie.

Dangerfield, *Dr.* H. Vivian. Le Béribéré. Définition, étymologie, historique, bactériologie, symptomatologie, pathogénie, pathologie expérimentale, traitement. Deux planches en couleurs, *etc.* *Paris*, 1905. 8°.

Dictionnaire des sciences anthropologiques....Avec...figures dans le texte. *Paris*, [1889.] 4°.

Dvivedin, Acala. निर्णयदीपकः [Nirnaya dipaka...With commentary in Gujrati...by Kṛiṣṇa Sāstri. Edited by Sada Sankara Hirāsankara.] [*Nadiar*, 1897.] 8°.

Farnell, L. R. The Evolution of religion An anthropological study. *London, New York*, 1905. 8°.

Grier, Sydney C., *pseud.* [*i.e.*, *Miss* Hilda Gregg]. The Letters of Warren Hastings to his wife. Transcribed in full from the originals in the British Museum. Introduced and annotated by S. C. Grier. *London*, 1905. 8°.

Haeckel, Ernst. Wanderbilder. Serie I und II, Die Naturwunder der Tropenwelt. – Insulinde und Ceylon. *Gera.-Untermhaus*, [1905]. 4°.

Presd. by the Author.

Haffner, *Dr.* August. Texte zur arabischen Lexikographie Nach handschriften herausgegeben von Dr. A. Haffner. *Leipzig*, 1905. 8°.

Hāji bābā. ترجمه حاجي بابا اصفهاني [Persian Translation of Morier's Hājibaba of Ispahan by Ākā Mirzā Asdulla Khān of Irān.] [*Bombay*, 1905.] 8°.

Henry, Victor. Le Parsisme. *Paris,* 1905. 8°.

Merzbacher, *Dr.* Gottfried. The Central Tian-Shan Mountains, 1902–1903. *London,* 1905. 8°.

Mironow, Nicolaus. Die Dharmaparīkṣā des Amitagati. Ein beitrag zur literatur-und religionsgeschichte des Indischen mittelalters. Inaugural-Dissertation, *etc.* *Leipzig,* 1903. 8°.

Newcombe, A. C. Village, Town, and Jungle life in India... With illustrations. *London,* 1905. 8°.

Oldenberg, Hermann. Vedaforschung.
Stuttgart, Berlin, [1905.] 8°.

Rawling, C. G. The Great Plateau, being an account of exploration in Central Tibet, 1903, and of the Gantok expedition. 1904–1905...With illustrations and maps. *London,* 1905. 8°.

Royal Society—*London.* Reports of the Commission...for the investigation of Mediterranean fever, *etc.* Pt. 4, *etc.*
London, 1906. 8°.

Presd. by the Society.

Schuster, Felix. The Bank of England and the State. A lecture, *etc.* *Manchester,* 1906. 8°.
Manchester University Lectures, No. 2.

Presd. by the University.

Wallace, Alfred Russel. My life. A record of events and opinions...With facsimile letters, illustrations and portraits. 2 vols. *London,* 1905. 8°.

13. *An account of the Gurpa Hill in the District of Gaya, the probable site of the Kukkuṭapādagiri.*—*By* Babu Rakhal Das Banerji. *Communicated by* Dr. T. Bloch.

Introductory Remarks.

Since General Cunningham's unconvincing identification of the Kukkuṭapāda Hill, mentioned by the Chinese pilgrims as the place where Mahākāśyapa entered Niṛvāṇa, with some low hills north of Kurkihār in Gaya District, Dr. Stein in his report on an Archæological tour in South Bihar and Hazaribagh, has located this site on the Sobhnāth Hill, the highest peak in a range of hills further south-west from Kurkihār and about four miles distant from the village of Wazirganj.[1]

The following account describes another hill in Gaya district which, for various reasons, seems to agree more closely with the account given by the Chinese of the Kukkuṭapāda or Gurūpādagiri, as it also used to be called. The hill has first been brought to notice by Babu Sreegopal Bose, a Sub-Overseer of the Public Works' Department, in charge of Bodh Gaya, who already noticed the great similarity between the remains on the Gurpa Hill with the description given by the Chinese of the Kukkuṭapādagiri. He accompanied the author of the following paper on his visit to the hill during the last Christmas holidays.

The points which to my mind make the identification of the Gurpa Hill with Kukkuṭapādagiri preferable to Dr. Stein's identification with the Sobhnāth Hill, are the following:—

(1) The modern name *Gurpā* is an exact Prākritic development out of Sanskrit *Gurupāda*, the second name by which the hill used to be called according to the Chinese.

(2) The distance of 19 to 20 miles east of Bodh Gaya agrees better with the 100 li east of the same place, the distance given by Hiuen Thsang, than the distance of 14 miles north-east of Bodh Gaya, as calculated by Dr. Stein for the Sobhnāth Hill. Probably also the corresponding distance from the approximate site of Buddhavana will be found to agree better with the Chinese accounts for Gurpā than for Sobhnāth.

(3) The Gurpā Hill has a large tunnel running through it and forming a passage leading to the top, thus corresponding accurately with the cleft through the hill made by Kāśyapa on his ascent according to the Chinese accounts. No similar feature is recorded for the Sobhnāth Hill by Dr. Stein, who, on page 89, merely observes that "in the confused masses of rocks heaped up all along the crest lines of the three spurs, we can look for the passages which Kāśyapa was supposed to have opened up with his staff.

[1] *Ind. Ant.*, March 1901, p. 88.

(4) The top of the Gurpā Hill has three distinct peaks forming the three cardinal points of a triangle. Hiuen Thsang likewise speaks of three high peaks on the summit of Kukkuṭapādagiri, between which Kāśyapa sat down when he entered Nirvāṇa. With regard to Sobhnāth, Dr. Stein mentions merely three spurs, extending from one joining point into various directions and thus resembling a cock's foot, from which, according to him, the hill came to be named 'Cock's foot Hill' (Skt. *Kukkuṭapādagiri*).

The Gurpā Hill has, on its peaks, remains of old brick buildings, which may have belonged to the Stupa on the top of Kukkuṭapādagiri, mentioned by Hiuen Thsang.

That the Gurpa Hill still forms an object of local worship is also a point which cannot be overlooked.

From all the above arguments, I think the proposed identification of Gurpā with the Kukkuṭapāda or Kurupādagiri of the Chinese has much that speaks in its favour. I only regret that the paper impressions of the two short inscriptions referred to below were too indistinct to enable me to add a complete reading of the inscriptions.

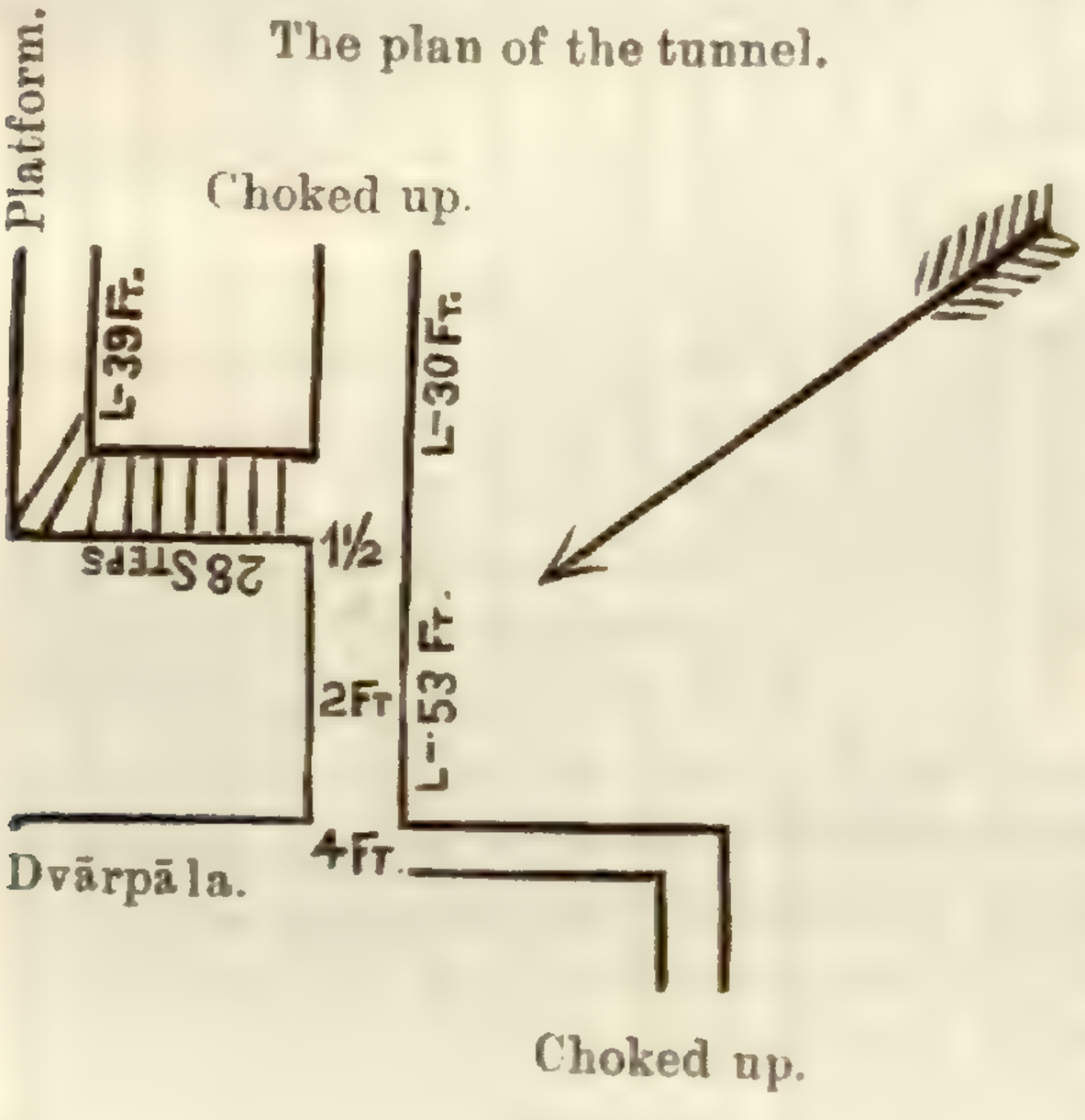
T. Bloch.

Gurpa is the name of a hill near the station of the same name at the 25th mile on the new Railway from Katrasgarh to Gaya. Directly, it is about 19-20 miles from Bodh Gaya. The village folk call the hill Gurpa. They say that the deity of the hill, Gurpā-sinmāi, suffers nobody to climb on it with shoes, and whoever does so is sure to slip his foothold. The sides of the hill are

very steep and composed of polished slippery boulders large and small, which justify the statement. There is only a single path leading to the top on the north side of the hill, all other portions being unclimbable. The plain surrounding the hill is thickly wooded. From the station to the foot of the hill is about one mile, and we had to cross the dried-up bed of a hill stream on

the way. The hill is a curved chain running S.W. to N.E. The south-western portion ends in a small peak. In the middle of the chain there is a sharp rising of about 300 ft. which divides itself at the top into three sharp peaks; after this, at a distance of about 500 ft., it ends abruptly. This is the highest peak in the neighbourhood, higher than the Brahmayoni, the height being slightly short of 1,000 ft. Along the track to the summit the trees grow smaller, and along the highest peak the vegetation shrinks to short reeds and sharply-pointed grass. There is a sort of wood-land track up to the back of the hill, *i.e.*, up to the base of the highest peak, going across the hill to the south-western or other side and ultimately losing itself in a rough upward incline at the base of the highest peak. Here is a small Ahir shrine consisting of six small mounds of earth well plastered over with cowdung and marked with vermilion, which is known as Dvārapāla, the gate-keeper of Gurpasinmāi. Here, concealed among the shrubbery, appears the mouth of a tunnel or cave 4 ft. wide and 6 ft. in height. At a small distance from the entrance, it branches into two parts, one south-westernly going downwards and choked with large bricks, stones and rubbish, and the other 2 ft. in width in the entrance going upwards, gradually narrowing until at the 53rd ft. from the junction, it becomes impassable, being merely a fissure in the rock with sharp rocks interlacing across the fissure. Here another passage opens towards N.E. Turning to this gallery one stumbles as it is extremely dark, upon a staircase of stone of 28 steps at the end of which the passage turns sharply almost at right angles towards the east and ends on a platform formed by a large boulder. At the extremity of this platform is another Āhir shrine. The object of worship is a small pool of rain-water formed in a natural depression in the rock, around which are placed three small boulders of about a man's height. Here the track becomes sheer impossibility. The path is along boulders of stone polished to the smoothness of marble by the action of rain-water up an incline of 60° with no hold for assistance, for at this height vegetation consists of sharp, thorny grass and thin reeds. After a climb of more than 50 ft., another platform is reached. Here, another tunnel is reached running north to south across the whole width of the mountain, a length

The plan of the tunnel.



of about 30 ft. The tunnel is formed of huge pieces of stone leaning on one another, thus forming a sort of archway 4 ft. in height at the entrance, gradually widening in circumference—the height at the end of the cave or tunnel being nearly 30 ft. The tunnel ends in a steep precipice about 500 ft. high. At the edge of the tunnel there is a rectangular tank with a single step running along its four sides (8′ × 5′). The tank is dry and there is no possibility of its ever being filled with rain-water.

I heard a curious story about this tank from a guard of the East Indian Railway, Babu Dayāl Ch. Gupta. He told me that the tank was covered with a huge piece of stone which was raised by order and in the presence of Mr. F. E. Cockshott, the Engineer-in-charge of the new line, and inside was found a skeleton more than 6 ft. in length. Where the skeleton and the covering stone is now I could not ascertain. Was this a Sarcophagus? On a small boulder along one of the walls of the cave are some Buddhist sculptures, a headless statue of Buddha about 8′ in height, another of a crowned Buddha in the Bhumisparśa Mudrā, 1′–4″ in height and a votive stupa with panels containing a Buddha on each of its four faces about 2 ft. in height, all uninscribed. The track to the top continues from the platfrom at the entrance of the tunnel or cave mentioned above along the walls of the cave. Here steps are cut in the stone of the width of about ten to eleven inches. From this platform further climbing with boots and shoes on became an impossibility. Many of these steps are almost effaced with age, being mere notches less than an inch wide scarcely affording a foothold, while some are perfect. The last part of this curious stairway which leads to the top of the highest of the three pinnacles winds itself half around it. From the platform the three peaks are distinctly seen, their pinnacles would form a right-angled triangle.

The N.E. peak is the highest, the Western in the next, the Southern being the lowest of the three. On the top of the highest peak there is a piece of level ground about 20 ft. square on which there lie, side by side, two shrines each five feet square in dimension. The shrines are made of huge ancient bricks, sculpture and statuary loosely piled without any mortar or cement. In each is shrined a pair of footprints on dark square pieces of stone. The western shrine contains a slab which is evidently modern judging from the clumsiness of the sculpture of the floral ornamentation around the footprint and the unnaturalness of the footprints themselves. Besides these there are numbers of Buddhas, some of them crowned and Buddhist Taras enshrined in each of these shrines. Lying on each of the four corners of the eastern shrine are four votive stupas. The slab in this shrine contains two lines of inscriptions along the two sides of the slab in early Kuṭila characters, such as those which occur in the Bodh Gaya inscriptions of Mahānāman. One of these lines is the usual Baddhist sloka "*Ye Dharmā hetu prabhavā.*" etc.—the "hetu prabhavā" is quite distinct in my impression. The other line most probably contains a dedicatory inscription as

along the middle of it I can read in my impression "*tad bhavatu satvānāṁ mātāpitroḥ, etc.*" On the walls of the western shrine I noticed a chaitya panel inscribed below with a *Deya-Dharma* and *ye Dharmā hetu*, etc. The one other inscription is by far the most important of the whole lot. It is incised on the back of a door lintel or jamb. On this side the jaggedness of the chisel marks has not been removed by polishing. The initial letter is most probably *gu;* then follows several letters which I cannot make out. Then a gap of about 3 or 4 inches after which follows a *na* inverted and after that another letter also inverted, but which has been cut away by an incision in the stone probably for the iron clamp which secured this piece to other portions of the door or window.

On the western peak there is another square basement of large bricks, probably the base of a stupa. At present the peak is difficult of access. On the southern peak there is a large pile of fragments of sculptures, bases of stone stupas, votive stupas, portions of statuary, etc. Traces of blood stains were found at the door of the two temples on the north-western peak, and, on enquiry, I learnt that the villagers offer animal sacrifices at all the shrines. The best view of the three peaks is obtained from the platform where the Āhirs worship a natural hollow in the rock described above. It is evident from the above description that the remains at Gurpa are of Buddhistic origin.

Gurpa Hill coincides remarkably well with Hiuen Thsang's description of Kukkuṭapādagiri. The tunnel through the rock must be the very tunnel which, according to Hiuen Thsang, Kāśyapa

opened for himself. "Ascending the north side of the mountain he proceeded along the winding path and came to the south-west ridge. Here the crags and precipices prevented him from further advance. Forcing his way through the tangled brushwood he struck the rock with staff and thus opened a way." This is the first tunnel in the accompanying plan which branches at a short distance from the entrance and goes downwards. "He then passed on having divided the rock and ascended till he was again stopped by the rocks interlacing one another. He again opened a passage through, and came out on the mountain-peak on the north-east side." One of these is the tunnel leading to the stairway and the other is the tunnel which contains the stairway described above. We learn from Fa Hian that the entire body of Kāśyapa was preserved in a side chasm on the hill. Perhaps the skeleton found in the cave is the skeleton of the venerable Kāśyapa. Fa Hian also says that outside the chasm is the place where Kāśyapa when alive washed his hands. This is the natural hollow in the rock described above as an Āhir shrine. It is interesting to note that the place is still an object of local worship. Both Hiuen Thsang and Fa Hian agree to the fact that the approach to the hill lay through a dense forest inhabited by wild beasts. This is still so. The whole of the plain is covered with dense forest. On our way from the Railway to the base of the hill we found marks of enormous paws on the sandy ground. According to our guide, a local man, the forest is inhabited by large numbers of bears and tigers, some of whom are white. Probably these white tigers are described by Hiuen Thsang as Lions, since lions in these parts of the country are scarce. According to Hiuen Thsang Kāśyapa, after emerging from the tunnel, proceeded to the middle point of the three hills and there he still lies awaiting the coming of Maitreya Bodhisattva. The second tunnel described above is formed of huge boulders of stone leaning against each other. A further point of coincidence is this. Hiuen Thsang says: "On quiet evenings those looking from a distance see sometimes a bright light as it were of a torch, but if they ascend the mountain there is nothing to be observed." I heard from Dayāl Babu that on dark nights lights are visible on the top of the mountain. The villagers attribute the presence of these lights to jewels which they say are on the mountain-top. Some Europeans organised a search party, but on reaching the top they of course found nothing. This also is a curious survival of the tradition which has been recorded by the Chinese master of law thirteen centuries ago. The gentleman from whom I received these pieces of information know very little either of the Chinese pilgrims or of the venerable Mahā Kāśyapa. The mountain-side is covered with caverns which justifies Hiuen Thsang's epithet "Cavernous." It is imposible to photograph the three peaks, because the place whence the only distinct view is obtainable is too small for working a camera.

14. *Some Persian Riddles collected from dervishes in the south of Persia.*—*By* Lieut.-Colonel D. C. Phillott, 23rd Cavalry, F.F., *Secretary to the Board of Examiners, Calcutta.*

1. A strange thing I saw in this world :
Water bubbling round fire.

Answer : Samāvār.

2. A strange thing I saw in this world :
It roared and wailed and circled round.

Answer : Mill.

3. What is that which travels without feet, head or hands ?

Answers : W a t e r,
Wind, a Worm.

4. What is that which hides men in its belly ?

Answer : The Earth.

5. What is that which encompasses the world in a moment ?

Answer : The wind.

6. What is that which from head to foot is all tongue ?

Answer : Fire.

7. What is that which no woman will eat ?
If a man eat it he grows strong.
Good is it and impalpable, but in eating it
Neither hand, nor lip, nor mouth is used.

Answer : Knowledge.

8. White art thou as snow ; black am I as a Negro :
My head is split : thou art below and I am above.
You do not move : though I do move.

Answer : Pen and Paper.

9. What is that travelling ship, double-doored,
Lion-armed and dragon-shaped ?
Another sight I saw in it :
It made the dead alive.

Answer : Tortoise.

چند معمّای فارسي که جناب معلی القاب کرنل دي - سي - فلات صاحب متعلق به قشون سوار۴ نمبر ۲۳ سرحدي پنجابي و رئيس مجلس ممتحنين دولتی کلکته در اقامتشان در کرمان و بلوک جنوبیۀ ایران از دراویش و غیره جمع آوري نموده‌اند ذیلاً نگارش میرود

1 عجائب صنعتی دیـــدم درین دشت / که آب جوش میزند بر دور آتـــش } حَلّ = سماوار

2 عجائب صنعتی دیـــدم درین دشت / که میغرید و مي نالید و مي گشت } حَلّ = آسیاب

3 آن چیست که بی پا و سر و دست روان است ؟ حَلّ = آب، باد، یا خراطین

4 آن چیست که اندر شکمش خلق نهان است ؟ حَلّ = خاک

5 آن چیست که یک لحظه بگردد همه عالم ؟ حَلّ = باد

6 آن چیست که سر تا بقدم جمله زبان است ؟ حَلّ = آتش

7 آن چیست که هرگز نخورد او را زن / گر مرد خورد قوي شـــود او را تن / خوب است و لطیف لیک در خوردن آن / نه دست بکار آید و نه لب نه دهن } حَلّ = علم

8 تو سفید همچو بوني من سیه همچو زنگم / سرم هم شگاف دارد تو بزیر و من به بالا / تو نجنب که من بجنبم } حَلّ = قلم و کاغذ

9 چیست آن کشتي روان دو در ، شیر بازو و اژدها پیکر ؟ / صنعت دیگری درو دیدم ؛ مرده را زنده میکند بنظر } حَلّ = کاسه‌پشت

10. A headless crane I saw: nor barley does it eat nor wheat;
Water it drinks from the river and it benefits all mankind. *Answer:* Pen (reed).

11. What is that strange creature with two heads?
Six holes has it in its body:
Weigh it and its weight is six *miṣqāl*;[1]
On its back it carries a hundred *mann*.[2]
Answer: Horse-shoe.

12. A strange creature I saw that had six legs and two heads:
Stranger still, listen to me, was this; its tail was in its back. *Answer:* Scales.

13. A strange thing I saw in this world
That had a hundred nails in its feet and hands.
Five bodies, five heads and four lives
Read me this riddle, oh wise man.
Answer: Bier (with the corpse borne by four men).

14 What is that which is light as a fairy?
It flies without wings; it emits sound though void of mouth.
Answer: Paper-kite.

15. What is that which is round and rolling
Its whole without life: its halves alive?
Ass is he that guesses not this
And less than a *goat* is that *ass*.
Answer: Melon (*Khar-buz*).

16. A man from Africa came to me;
A strange weird creature he had with him;
The animal by God's creating
Had eighty heads and ten bellies and thirty legs.
Answer: Elephant (*Fīl*).[3]

17. The head of (the word) *mullā* on the neck of *mullā*.
This riddle is made in the name of God.
Answer: The word *Majid*[4] "Glorious."

[The head of *mullā* is the letter *mīm*, and the Arabic for neck' is *jīd*: together these make *Majīd*.][4]

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[1] One *miṣqāl* is = $\frac{1}{16}$ oz. and 90 *miṣqāl* = 14 oz.
[2] The Tabriz *mann* is about 7 lbs.
[3] By *abjad*: ف = 80 and ي = 10 and ل = 30.
[4] One of the ninety-nine attributes of God and also a proper name.

10 بی سر کلنگ دیدم نی چو خورد نه گندم
آبی خورد ز دریا نیضش رسد بمردم
حَلّ = قلم

11 چیست آن صنعتی دو سر دارد ؛ شش تا سوراخ دربدن دارد؟
بکشی وزن او چهل مثقال بار صد من به پشت بردارد
حَلّ = نعل اسپ

12 عجائب خلقتی دیدم که شش پا و دو سر دارد
عجائب ترازین بشنو میان پشت دم دارد
حَلّ = ترازو

13 عجائب خلقتی دیدم در این دشت
که صد ناخن بود بر پا و بر دست
تنش پنج و سرش پنج و نفس چار
جوابی ده بمن ای مرد هشیار
حَلّ = جنازه

14 آن چیست که مانند پری ناز کند
بی پر پرد و بی دهن آواز کند
حَلّ = کاغذ هوا

15 چه چیز است آنکه باشد گرد و غلطان
دو نیمش زنده باشد لیک بیجان
خر آن باشد که این معنی نفهمد
ز بز کمتر بود آن مرد نادان
حَلّ = خربزه

16 شخصی ز حبش رو بسوی ما داشت
یک جانور بوالعجبی همرا داشت
آن جانور از صنع خداوند کریم
هشتاد سر و ده شکم و سی پا داشت
حَلّ = فیل

17 سر ملا بگردن ملا
این معمّا شود باسم مجید
حَلّ = مجید

18. It travels to the sky ahead of the eye
But no one has ever seen it.

Answer : Sight.

19. This wool-dressed and well-stuffed Ṣūfi
Has one penis and two hundred testicles.

Answer : The *Kaṭhal*[1] or Jack-fruit.

20. In the depths of this sea there dwells a shark
That holds in its mouth a single pearl ;
Strange that though it has no belly
It drinks the sea to the last drop.

Answer : The Wick of a *Chirāgh*.

21. A bird I saw without legs or wings ;
Born neither from womb of mother nor loin of father :
Neither in the sky nor 'neath the earth it lives,
Yet it ever eats the flesh of man.

Answer : Anxiety.

22. What is that fairy-shape that has no life ?
It laughs yet has no mouth :
It weeps yet has no eyes
It travels much yet has no feet.

Answer : Cloud.

23. What is that which has no bones ;
In its body it has neither breath nor life ?
When hungry it is at rest
When full it complains.

Answer : Mill-stone.

24. A strange thing I saw in this world ;
Inanimate it followed the animate.

Answer : Threshing-machine.

25. Two bodies in two Caravans I saw
Their heads bared, their bodies blistered ;
The Caravans do not move without permission of those two
Nor do those two move without permission of the Caravan.

Answer : Dice at Backgammon.

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[1] This riddle was made in India.

18 رود تا آسمـــان در پیش دیـــده
ولیکن هیچکـــس اورا ندیـــده
حلّ = نظر

19 صوفي صـــوف پوش پر مایـــه
یک ذکر دارد و دو صـــد خایـــه
حلّ = کلّهل

20 نهنگـــي هست اندر قعـــر دریا
گرفتـــه در دهان یک دانـــه گوهر
عجب آنست که اورا خود شکم نیست
ولیکن میخـــورد دریـــا سراسر
حلّ = فتیله‌چراغ

21 یکـــی مرغ دیـــدم نه پا ونه پر
نه از رحم مادر نـــه پشت پدر
نه بر آسمـــان و نه زیر زمیـــن
همیشـــه خورد گوشت آدمـــي
حلّ = فکر

22 چیست آن لعبتی که جانش نیست
خنـــدها میکنـــد دهانش نیست
گریـــه ها میکنـــد ندارد چشـــم
سیر ها میکنـــد و پایش نیست
حلّ = ابر

23 این چیســـت که استخـــوان ندارد
در پوســـت نفـــس و جـــان ندارد
چون کُشـــنه شود ملـــول[1] گردد
چون سیـــر شود فغـــان بر آرد
حلّ = آسیاب - سنگ

24 عجائب صنـــعتی دیدم درین دشت
که بـــے جان در پئے جان دار مي گشت
حلّ = برچّین

25 دیدم دو تن فتاده میـــدان دو قافله
سرها برهنـــه کرده و تن‌ها پُر آبله
نه قافله روان شده بي اذن آن دو تن
نه آن دو تن روان شده بي اذن قافلـــه
حلّ = لعبتین

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[1] *Malūl = Ārām.*

26. **What is that which has no bones ;**
If it fastens on you it does no harm.

Answer : A Leech.

27. A warbler of this garden am I, and this garden is my flower ground
I'm a fire-eating bird,[1] am I, and fire is my plumage ;[2]
My bones are silver and in my belly I carry gold ;
He that guesses this is wiser than I.

Answer : Egg.

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[1] *Atash-khwār* is also a name for the pheasant.
[2] As it surrounds it when cooking

26 این چیست که اُستخـــوان ندارد
بت[1] بنـــد مي کند نقصـــان ندارد
حلّ = زالو

27 بلبل این باغم و این باغ گلُزارِ من است
مُرغ آتش خوارم و آتش پر و بالِ من است
استخـــوانم نُقره و اندر شکم دارم طلا
هر کسے معني بداند باز اُستادِ من است
حلّ = تُخم مُرغ

28 سرش لُوله مزو[2]
بیخش لوله خزو[3]
ما همه خوردیم ازو
حلّ = پستان زن

29 آن چیست کاسهٔ غضنفر فرّ[4]
چشـــم دارد یکـــے بکلّـــهٔ سر
چون شود گشنـــه مي شود فربه
چون شود سیـــر مي شود لاغر
حلّ = احمیل

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1 *Bit* for *bi-at* (بِه ات)
2 From *mazīdan* "to taste."
3 From *khazīdan* "to slide, be slippery."
4 *Ghaẓanfar* "lion" : *farr* "magnificence."

15. *Gyantse Rock Inscription of Chos-rgyal-gñis-pa, a ruler under the Sakyapa Hierarch in the fourteenth century* A.D.—*By* Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa, M.A.

This is a bas-relief in a heavy piece of grey slate 2 feet $3\frac{1}{2}$ inches long, 1 foot $1\frac{1}{2}$ inches broad, and 1 inch thick. It was brought from Gyantse Jong during the late Tibet expedition and is now deposited in the Indian Museum at Calcutta. The inscription is in a perfect state of preservation but a few letters on the corners at the top and bottom of the slate have been broken away and lost. It consists of 23 uneven lines which, if properly arranged, would make up eight verses of four feet each. As each foot consists of 9 syllables, there are altogether 288 syllables or words in the inscriptions. It is written in the Tibetan language and characters, but there are two benedictory phrases in Sanskrit at the beginning and end of the inscription.

The first $5\frac{1}{2}$ lines describe Upper Nyang, of which Gyantse is the capital, as a splendid dominion where all wishes are accomplished at once, and in which the ten perfect virtues always prevail. The next $9\frac{1}{2}$ lines refer to the repair and new construction of various Tāntrik images such as those of Guru Padmasambhava, Trinity of Father and Sons, the Three-fold Body of Buddha, etc., which were undertaken and accomplished by a ruler of Gyantse with the object of securing longevity for his wife the queen, for the increase of prosperity of his people, and for the propagation of the Blessed Doctrine. This ruler is named Chos-rgyal-gñis-pa, who is described as a virtuous man, a skilful disputant, a miraculous manifestation of Vajrapāṇi, and victorious over all quarters. The remaining eight lines contain the prayers of the man who raised the inscription. It is very probable that Chos-rgyal-gñis-pa (literally: religious king the second) is identical with Chos-rgyal-rab-brtan (literally: religious king the firm) who, as a regent under the Sakyapa Hierarch, ruled over Gyantse and founded the fort and monastery there in the fourteenth century A.D. There are evidences that the inscription belonged to the Sakyapa sect, and was prepared at a time when the Dalai Lamaic Government had not yet been established.

Translation.

Bliss.

A splendid dominion, productive of the ten perfect virtues,[1] in which the extent of the earth is washed by the light of love

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[1] Ten virtues called in Tibetan *Ge-cu* (དགེ་བཅུ) and in Sanskrit *Daśa-kuśala* (दशकुशल) are :—

(i) སྲོག་མི་གཅོད་པ, प्राणातिपात विरति, not to kill anything living.

and kindness,[1] which brings about the highest blessing of emancipation from rotatory existence,[2] in which religious kings, who are miraculous manifestations of Jina,[3] rule in succession, and where success (the ultimate object) is attained from fortune of the merit of good work—this dominion of Upper Nyang[4] (Ñaṅ), where all wishes are accomplished together, has Gyantse[5] (Rgyal-mkhar-rtse-mo) for its capital.

(ii) མ་སྤྱིན་པར་མི་ཞེན་པ, अदत्तादान विरति, not to take what has not been given.

(iii) ཞེན་པར་མི་མཉེམ་པ, काम मिथ्याचार विरति, not to fornicate.

(iv) རྫུན་མི་སྨྲ་བ, मृषावाद विरति, not to tell a lie.

(v) ཚིག་རྩུབ་མི་སྨྲ་བ, परुषवाग् विरति, not to use harsh language.

(vi) ངན་སྩོག་མི་སྨྲ་བ, सम्भिन्नप्रलाप विरति, not to talk foolishness.

(vii) ཕྲ་མ་མི་བྱེད་པ, पैशुन्य विरति, not to calumniate.

(viii) བརྣབ་སེམས་མི་བྱེད་པ, अभिध्या विरति, not to be avaricious.

(ix) གནོད་སེམས་མི་བྱེད་པ, व्यापाद विरति, not to think upon doing harm.

(x) ཞེན་པ་མི་བྱེད་པ, मिथ्यादृष्टि विरति, not to entertain heretic notions. Cf. Mahāvyutpatti, section 87, and Dharmasaṃgraha. section lvi.

[1] བྱམས་པ་དགྲེ is also (love and kindness) may also signify 'Maitreya, the coming Buddha.' There is actually such a Buddha in Gyantse. Percival Landon writes:—"Inside the central crimson-pillared hall (of the monastery at Gyantse) the only conspicuous object is the great seated figure of Maitreya, the next Buddha to be re-incarnated (Lhasa, Vol. I., p. 210).

[2] སངས་རྒྱས is signifies "re-birth," while དེས་ལེགས་ means "summum bonum." The whole means: "the highest good caused by deliverance from re-births." That rotatory existence and emancipation from it are inseparable, is the chief doctrine of the Sakyapa Sect as explained in Gser-chos-bcug-sum. See Sarat Chandra Das's article on Tibet, J.A.S.B., 1882, p. 127.

[3] Religious Kings who are miraculous manifestations of Jina, called in Tibetan རྒྱལ་པོ་ཆེ་ནམ་འཕྲལ་ཆོས་རྒྱལ, are *Srong-tsan-gam-po*, born A.D. 627, *Kri-srong-de-tsan*, born A.D. 728, *Khri-ral* or *Ral-pa-chen*, born A.D 864, etc. The Lamas of the Sakyapa Sect who, under authority from Kublai Khan, ruled over Tibet, 1270–1340 A.D., are perhaps referred to here.

[4] The Province of Nyang is divided into two parts: (1) ཞང་སྟོད, Upper Nyang, and (2) ཞང་སྨད, Lower Nyang. The capital of the former is Gyantse while that of the latter is Shigatse.

[5] Gyantse is a small town on the right bank of the Pena Nyang Chu river It is situated about two small hills which lie east and west and are united by a saddle. On the eastern hill is a large fort (Jong) and on the western hill a Gompa in which there is a *chorten* called Pangon chorten. See "Report on the Explorations in Great Tibet, by A. K., p. 31.

Here there are heaped up light blue[1] images beautiful like the turkois basins. It is explained on a margin of the Register (Kar-chag) that old ones were repaired and (the new ones that were) erected (are those of) Guru (Padmasambhava) in eight forms,[2] Dag-mar (Lohita Rudra), Dharma-sambhoga-nirmāṇa kāyas,[3] etc., consecrated[4] Lamas who combat against *avidyā* (Cosmic Blindness) being born in the line of Mañjughoṣa,[5] practitioners of charms, who are the essence of the Omniscient-

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1 Here some of the letters have been broken away. རྡོ་དཀར་ means 'white stone.' If the reading is རྡོ་ཁར་, which seems probable, the meaning would be: 'light blue.' So the meaning is either 'light blue mages' or 'images of white stones.'

2 Padma-sambhava generally called Pad-yung or Guru was the founder of Lamaism in Tibet. He has been deified and receives now more worship than Buddha himself. He was a native of Udyāna. a follower of the Yogācārya School, and a student of the College at Nalanda. At the invitation of King Khrisrong-de-tsan he visited Tibet in A.D. 747 and founded the monastery of Sam-ye, which is the first Tibetan monastery, in A.D. 749. His eight forms are thus enumerated :—

(i) Guru-padma-ḥbyuṅ-gnaṣ, "Born of a Lotus" for the happiness of the three worlds.
(ii) Guru Padmasambhava, "Saviour by the religious doctrine."
(iii) Guru Padma Gyalpo "The king of the three collections of scriptures (Tripiṭaka)."
(iv) Guru-rdo-rje gro-lod, "The Diamond comforter of all."
(v) Guru ñi-ma ḥod-zer, "The enlightening sun of darkness."
(vi) Guru-Sākya Seṅge, "The second Sākyasiṁha."
(vii) Guru Seṅge, sgra-sgrogs, "The Propagator of religion in the six worlds with the roaring lion's voice."
(viii) Guru blo-ldan-mchog-sred. "The conveyor of knowledge to all."

Cf. Waddell's Lamaism, p. 379.

3 ཆོས་སྐུ, धर्म्मकाय, "The body of law or the absolute body" is Buddha in the Nirvṇa. ལོངས་སྐུ, सम्भोगकाय, "the body of happiness or glory" is Buddha in the perfection of a conscious and active life of bliss in heaven. སྤྲུལ་སྐུ, निर्म्माणकाय, "the body of transformation and incarnation" is Buddha as man on earth (*Vide* Jäschke, under སྐུ).

4 The reading is obscure དབང་བསྱུངས probably is the same as अभिषिक्त consecrated. If the reading is དབང་བསྒྱུར it would mean "of eight powers."

5 Mañjughoṣa (འཇམ་དཔལ་ངོ) is the god of wisdom whose chief function is the dispelling of ignorance or cosmic blindness. "Born in the line of Mañjughoṣa" signifies "very learned," and refers specially to the Lamas of the Sakyapa sect.

merciful one, the Trinity of Father and Sons,[1] Gaṇapati and Gon-shal [2]—altogether twenty-seven in number.

Chos-rgyal-gñis-pa [3] (religious king the second) was virtue accumulated, a miraculous manifestation of Vajrapāṇi,[4] an uprooter of bad controversialists and victorious over all quarters. He, with his son in conference, for the longevity of her majesty the queen, for the increase of happiness and wealth of the people and for the propagation of the blessed doctrine, erected these images. Whatever power these have of doing good deeds by the same may the discordant conditions in all directions become quiet, may the strife among the eight classes of devils and the frontier war be appeased, may the imprecation [5] and magic circle be averted, and may good fortune be given to us.

Here we have made these designs. For other sentient beings living to the end of the sky, may the two aggregates, *viz.*, virtue

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[1] Trinity of Father and Sons (ཡབ་ཡུམ་གསུམ) means "Father and two Sons," that is, "Master and two Disciples" It probably refers to Khon-dkon-mchog-rgyal-po who founded the Sākyapa sect and to Je-kun-gaḥ-dol-chog and Kun-gaḥ-zaṅ-po who were the founders of the two sub-sects, *viz.*, ṅor-pa and Jonaṅ-pa of the Sākyapa School.

[2] མགོན་པོ, **नाथ,** or Lord, is a class of demon-generals of the fiercest type numbering seventy-five. མགོན་ཞལ (perhaps same as མགོན་པོའི་ཞལ) "Lord-face" is, according to Waddell, a demoniacal guardian of the Sākyapa sect (*Vide* Lamaism, p. 70). Here མགོན and ཞལ may be taken separately, so that the sentence may be interpreted thus:—"……Gaṇapati and Nāths (mgon)—altogether twenty-seven individuals (*shal*, faces or individuals) in number."

[3] Chos-rgyal-gñis-pa (religious king the second) refers probably to Chos-rgyal-rab-brtan who built the fort (Jong) and the monastery of Pal-khar-choi-de at Gyantse. Rai Sarat Chandra Das Bahadur, C.I.E., writes:—

"It (the Jong of Gyantse) is very strong, and was built by the famous Chos-rgyal-rab-brtan who ruled in the fourteenth century over the Province of Nyang, of which Gyantse was the capital. This province was a part of the domain of the Sakya hierarchs." . . . . "He (a well-informed Nyingma lama) told him (Ugyen), furthermore, that there existed two printed volumes about Choigyal rabtan (Chos-rgyal-rab brtan), the famous king who had founded the Palkhor choide of Gyantse, but that these works and the history of Gyantse were now kept as sealed works (*terchoi*) by the Lhasa Government." . . . "On the first floor (of the chorten in the Palkhor choide) we were shown the statue of Choigyal rabtan (Chos-rgyal-rab-brtan), under whose benign rule Gyantse became famous, and who gave a fresh impulse to Buddhism and literature. The Kunyer of the chorten touched our heads with the sword of this illustrious monarch, and said that by his blessing (*jin-lah*) we could triumph over our enemies and enjoy longevity and prosperity in this world."—(Sarat Babu's Journey to Lhasa and Central Tibet, edited by Rockhill, pp. 87, 88, 89.)

[4] Vajrapāṇi, a tutelary deity, generally invoked by the followers of the Sākyapa sect.

[5] Imprecation (གཏོར)—This is a kind of imprecation which consists in hiding the name and image of an enemy in the ground underneath an idol, and imploring the deity to kill him.

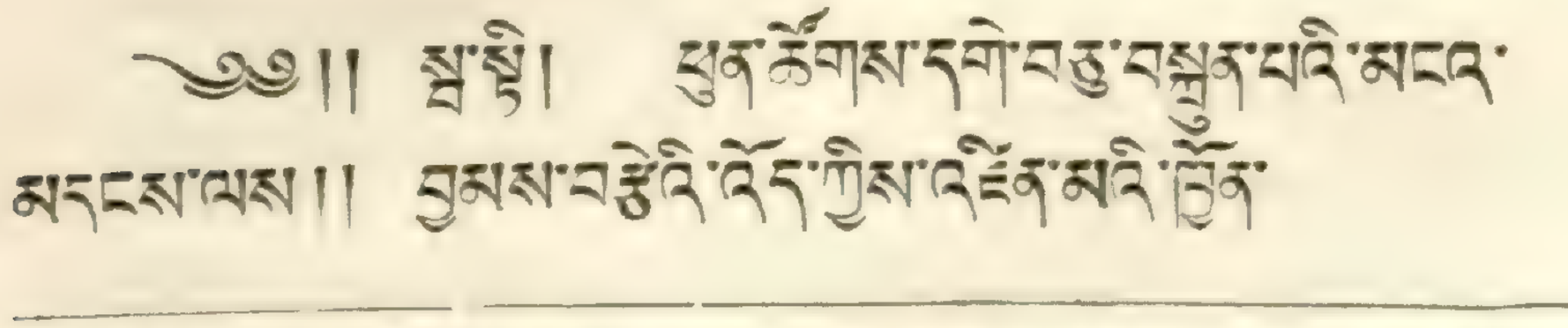
and wisdom be accomplished and the two defilements[1] quickly clear out. For the quietnde of the unstable world may the three persons (Dharma-sambhoga-nirmāṇa kāyas) collectively come. By the blessing of the three may the approved infallible truths prevail. May the king with brother, sister, mother and son live a long life and may the kingdom go on smoothly. May there be happiness and prosperity as in the golden age.[2]

All auspicious.

Transliteration.

॥ Sva-sti ॥ Phun-tshogs dge-bcu bskrun-pahi mṅaḥ mdaṅs las ॥ Byams-brtshhi hod-kyis hdsin-mahi khyon byab-pa ॥ Mṅon-mtho ṅes-legs dpal-la sbyor-mdsad-pahi ॥ Rgyal-wahi rnam-hphrul chos-rgyal rim-byon rgyal ॥ Legs-byas bsod-nams dpal-las grub-pahi yul ॥ Hdod-dgu lhun-grub Ñaṅ-stod rig-hbyuṅ-wa. Chos-rgyal pho-braṅ Rgyal-mkhar-rtse-mo-yi ॥ Gyu-gshoṅ-ltar mdses rdo = dkar debs-bshugs rten ॥ Snar-bshugs dkar-chag-zur gsal shig-bsos daṅ ॥ Yar-bsheṅs Gu-ru mtshan-brgyad Drag-dmar daṅ ॥ Chos-loṅs-sprul-sogs dwaṅ-brgyud bla-ma daṅ ॥ Ma-rig-la hkhon hjaṁ-dwyaṅs-rigs-hkhruṅs-pahi ॥ Mkhyen-brtsehi bdag-ñid snags-hchaṅ yab-sras gsum ॥ Tshogs-bdag Mgon-bcas shal graṅs ñi-śu-bdun ॥ Chos-rgyal gñis-pa bsod-nams lhun-grub daṅ ॥ Gsaṅ-bdag rnam-hphrul rgol ṅan mthar-byed-pa ॥ Phyogs-las rnam-rgyal sras-bcas bkaḥ-bgros-nas ॥ Lha-gcig rgyal-mo sku-tshe brtan-phyir daṅ ॥ Mṅaḥ-hbaṅs bde-skyid dpal-hbyor-rgyas byed daṅ ॥ Bstan-pahi mig-rkyen dge-wa rgyas-slad bsheṅs ॥ Hdis mtshon rnam-dkar mdsad-pa ji-sned mthus ॥ Gnas-skabs mi-mthun phyogs-rnams shi-wa daṅ ॥ Sde-brgyad hkhrug daṅ mtha-dmag zlog-pa daṅ ॥ Gtad-khram hphrul-hkhon shi-wahi dge-legs stsol ॥ Hdi-yi phyogs-su bkod-pa-las byas daṅ ॥ Gshan yaṅ nam-mkhahi mthar thug sems-can-rnams ॥ Tshogs-gñis rab-rdsogs sgrib-gñis myur byaṅ-nas ॥ Srid shir mi-gnas sku-gsum lhun-grub śog ॥ Brtag-bden mi-slu-rnam gsum-byin-rlabs-kyis ॥ Mi-dwaṅ sku-mched yum daṅ sras bcas-kyi ॥ Sku-tshe brtan-shiṅ chab-srid hjaṁ doṅ ṅos ॥ Rdsogs-ldan bshin-du bde-rgyas bkra-śis śog ॥ Sarva-maṅga-lam ॥

Text.



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[1] སྒྲིབ་ probably is the same as आवरण which is thus divided :— तच्चावरणे द्वे । तद्यथा । क्लेशावरणं ज्ञेयावरणं चेति ॥ (Dharmasamgraha, sect. CXV).

[2] སྡེ་བཞི་ཁྲུགས, सत्ययुग (Satya-yuga) is golden age.

ཁྱབ་པ༎ མངོན་མཐོ་ངེས་ལེགས་དཔལ་ལ་སྦྱོར་མཛད་པའི།།

རྒྱལ་[1]བའི་རྣམ་འཕྲུལ་ཆོས་རྒྱལ་རིམ་བྱོན་རྒྱལ།། ལེགས་བྱས་བསོད་
ནམས་[2]

དཔལ་ལས་གྲུབ་པའི་ཡུལ༎ འདོད་དགུ་ལྷུན་གྲུབ་ཅང་སྟོད་རི་ག་འབྱུང་བ༎

[3]ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།། གཡུ་གཞོང་ལྟར་མཛེས་ཏོ

[4]དཀར་རིབས་བཞུགས་རྟེན།། སྤུར་བ་ཞུགས་དཀར་ཆག་རྡུར་གསལ་ཞིག་
བསོས་དང་༎

[5]ཡར་བཞེངས་ག་རུ་མཚན་བརྒྱད་དྲུག་དམར་དང་།། ཆོས་ལོངས་སྤྲུལ་
སོགས་དབང་

[6]བརྒྱད་བླ་མ་དང་།། མ་རིག་ལ་འཁོན་འཛམ་རབྱུངས་རིགས་འཁྲུངས་
པའི།། མཁྱེན་བརྩེའི་བདག་ཉིད་སྟུགས་འཆང་ཡབ་སྲས་གསུམ།། ཚོགས་
བདག་མགོན་བཅས་ཞལ་གྲངས་ཉི་ཤུ་བདུན།། ཆོས་རྒྱལ་གཉིས་པ་
བསོད་ནམས་ལྷུན་གྲུབ་དང་།། གསང་བདག་རྣམ་འཕྲུལ་རྒོལ་ངན་མཐར་
བྱེད་པ༎ ཕྱོགས་ལས་རྣམ་རྒྱལ་སྲས་བཅས་བཀའ་བགྲོས་ནས། ལྷ་གཅིག་
རྒྱལ་མོ་སྐུ་ཚེ་བརྟན་ཕྱིར་དང་།། མངའ་འབངས་བདེ་སྐྱིད་དཔལ་འབྱོར་
རྒྱས་

1 རྒྱ is broken and destroyed.

2 ནམས་ is destroyed.

3 ཆོ is broken.

4 ཏོ་དཀར is broken and destroyed. Instead of ཏོ་དཀར we should rather read ཏོ་ཁར།

5 ཡར is broken and illegible.

6 Is it a wrong spelling for བརྒྱད meaning eight?

བྱེད་དང་།། བསྟན་པའི་མིག་རྐྱེན་དགེ་བ་རྒྱས་སྤྱད་བཞེངས།། འདིས་
མཆོན་རྣམ་

དཀར་མཛད་པ་ཛི་སྙེད་མཐུས། གནས་སྐབས་མི་མཐུན་ཕྱོགས་རྣམས་ཞི་
བ་དང་།།

སྨེ་བརྒྱད་འཁྲུག་དང་མཐའ་དམག་ཟློག་པ་དང་།། གཏད་ཁྲམ་འཕྲུལ་
འཁོར་

ཞི་བའི་དགེ་ལེགས་སྤྱོལ། འདི་ཡི་ཕྱོགས་སུ་བཀོད་པ་ལས་བྱས་དང་།།
གཞན་[1]

ཡང་ནམ་མཁའི་མཐར་ཐུག་སེམས་ཅན་རྣམས།། ཚོགས་གཉིས་རབ་
རྫོགས་སྒྲིབ་

གཉིས་སྦྱར་བྱང་ནས།། སྲིད་ཞིར་མི་གནས་སྐུ་གསུམ་ལྷུན་གྲུབ་ཤོག།
བདག་བདེན་མི་སླུ་རྣམ་གསུམ་བྱིན་རླབས་ཀྱིས།། མི་དབང་སྐུ་མཆེད་ཿ
ཡུམ་དང་སྲས་བཅས་ཀྱི།། སྐུ་ཚེ་བརྟན་ཞིང་ཆབ་སྲིད་འཛམ་རྡོང[3] (?)
ངོས།། རྫོགས་ལྡན་བཞིན་དུ་བདེ་རྒྱས་བཀྲ་ཤིས་ཤོག།། སརྦ་མངྒ་ལམ།།

Text.

Properly arranged.

ༀ།། སྭསྟི།།

ཕུན་ཚོགས་དགེ་བཅུ་བསྒྲུན་པའི་མངའ་མདངས་ལས།
ཐམས་བརྩེའི་འོད་ཀྱིས་འཛིན་མའི་ཁྱོན་ཁྱབ་པ །། ༡ །།

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[1] The last letter (ན) is broken.

[2] This word is broken and illegible.

[3] ངདོ་ is altogether effaced. It is supplied by the contributor.

མངོན་མཐོ་ངེས་ལེགས་དབུས་ལ་སྤྲོར་མཛད་པའི།
རྒྱལ་བའི་རྣམ་འཕྲུལ་ཆོས་རྒྱལ་རིམ་བྱོན་རྒྱལ།། ཨ །།

ལེགས་བྱས་བསོད་ནམས་ཤལ་ལས་གྲུབ་པའི་ཡུལ།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཨ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།། ཪ །།

ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།
ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།
ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།
ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།
ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།
ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
གཡུ་གཞོང་ལྷར་མཛེས་རྩེ་དཀར་དབས་བཞུགས་རྟེན།། ཪ །།

ཡར་བཞུགས་དཀར་ཆོག་རྩྭ་མཆོག་བཀྲ་དམར་དང་།
ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

ཆོས་རྒྱལ་པོ་བྲང་རྒྱལ་མཁར་རྩེ་མོ་ཡི།
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ཆོས་ལོངས་སྤྱོད་རྫོགས་པ་སངས་རྒྱས་ཐམས་ཅད་ཀྱི།
ཐུགས་རྗེ་ཆེན་པོ་ཡི་ངང་ལས་ཤར་བ་ཡིན།
འདོད་དགུ་ལྷུན་གྲུབ་ཉང་སྟོད་རིག་འབྱུང་བ།། ཪ །།

སྡེ་བརྒྱད་འཁྲུག་དང་མཐའ་དམག་ཟློག་པ་དང་།
གཏད་ཁྲམ་འཕྲུལ་འཁོར་ཞི་བའི་དགེ་ལེགས་སྩོལ།། ༡༨ །།
འདི་ཡི་ཕྱོགས་སུ་བཀོད་པ་ལས་བྱས་དང་།
གཞན་ཡང་ནམ་མཁའི་མཐར་ཐུག་སེམས་ཅན་རྣམས།། ༡༩ །།
ཚོགས་གཉིས་རབ་རྫོགས་སྒྲིབ་གཉིས་མྱུར་བྱང་ནས།
སྲིད་ཞིར་མི་གནས་སྐུ་གསུམ་ལྷུན་གྲུབ་ཤོག།། ༡༩ །།
བརྟག་བདེན་མི་སླུ་རྣམ་གསུམ་བྱིན་རླབས་ཀྱིས།
མི་དབང་སྐུ་མཆེད་ཡུམ་དང་སྲས་བཅས་ཀྱི།། ༡༧ །།
སྐུ་ཚེ་བརྟན་ཞིང་ཆབ་སྲིད་འཇམ་དོང་ངོས།
རྫོགས་ལྡན་བཞིན་དུ་བདེ་རྒྱས་བཀྲ་ཤིས་ཤོག།།༡༨།། སརྦ་མངྒ་ལམ།

16. *Notes on the Freshwater Fauna of India. No. III.—An Indian Aquatic Cockroach and Beetle Larva.*—*By* N. Annandale, D.Sc., C.M.Z.S.

Little is known of the aquatic or semi-aquatic Orthoptera,[1] which are probably not uncommon in tropical countries, and the only records of aquatic Cockroaches I can find are from Malaya and Borneo. The existence of a species of *Epilampra*, living in an Indian jungle stream, is therefore a fact of some interest.

In 1900 I recorded certain Cockroaches [2] as having aquatic habits in the Siamese Malay States. It now appears that at least two species were included, probably both belonging to the genus *Epilampra*. One of these is in the habit of resting on logs floating in the Kelantan River, and of diving when disturbed; while the other haunts the roots of trees and other sunken objects at the edge of jungle streams in the Patani States. In 1901, Shelford [3] published a note on two species, an *Epilampra* and a Panæthiid, from the base of a waterfall on Mount Matang in Sarawak, both species being immature.

On March 4th last, while turning over stones in a small jungle stream on a hill near Chakardharpur in Chota Nagpur, I saw what I took to be a large Woodlouse swimming rapidly along the surface of the water, having evidently been disturbed by the removal of a small piece of rock. On capture this animal proved to be a Cockroach. Unfortunately it is a larva (♀) and cannot be identified specifically; but undoubtedly it belongs to the genus *Epilampra*. When placed in a large jar of water, it swam very rapidly, using all six legs, to the side, which it attempted to mount. As was the case with the specimens observed by Shelford in Borneo, the tip of the abdomen, which was arched upwards, was held out of the water and bubbles of air rose from time to time from the thorax. The Cockroach, finding it impossible to climb up the glass, attempted to dive beneath it. In so doing, however, the Insect was impeded by the air which had become entangled at the base of its legs and between them and the antennæ, which were stretched backwards below the belly. Apparently in order

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1 Acridiids of the genus *Scelymena*, which are semi-aquatic, have been recorded from Java, Ceylon and Burma; many of the Indian and Malayan representatives of this group can swim well on the surface; and at least one Malayan species can dive. An aquatic Phasmid (*Prisopus*) is known from Brazil. Wood-Mason (*Ann. Mag. Nat. Hist.* (5) i, 1878, p. 101) called attention to a Bornean form (*Cotylosoma*) which he believed to be actually provided with gills; but Sharp (in *Cambridge Nat. Hist. V.*, p. 273, 1895) expresses doubt as to the function of the structures thus interpreted. Miall and Gilson (*Trans. Entom. Soc.* 1902, p. 284) have described an aquatic cricket (*Hydropedeticus*) from Fiji; an Indian *Tridactylus*, common among reeds and sedges in Calcutta, jumps into the water when disturbed and swims on the surface; while species of the latter genus are known to leap on the surface film.

2 *Entomologist's Record*, XII, 1900, p. 76.

3 *Report Brit. Association*, 1901. p. 689.

to get rid of this air, it turned over on its back and swam along belly upwards. Its progress, whether belly or back upwards, was extremely rapid, and it soon became exhausted and remained still at the edge of the jar, with the tip of its abdomen on the surface. When held under the water it drowned in a few minutes, much more rapidly than a specimen of *Periplaneta americana* would ordinarily have done.

An examination of the specimen showed a structural peculiarity which might have been expected from the fact that the tip of the body was held out of the water. The last spiracle is of a slightly tubular nature and projects at the side from below the posterior extremity of the seventh tergite, being provided with a thick ring of chitin. In other representatives, but not in all, of the Epilampridæ I find a similar modification, which in some is more marked than it is in the Chota Nagpur larva. This is specially true of *Epilampra pfeifferæ*, *Molytria maculata* and *M. badia*.[1] In the last (♂) the spiracle takes the form of a flattened, somewhat trumpet-shaped tube, which is turned upwards distally and lies almost parallel to the outer edge of the eighth tergite. In the Chota Nagpur larva the other abdominal spiracles are present, but under ordinary circumstances they are hidden beneath the edges of the dorsal and the ventral plates, which close together so as to shut them off completely from the water. Shelford's suggestion that the Cockroaches he took beneath a waterfall in Borneo used the posterior abdominal spiracle for taking in air, and the prothoracic spiracle for expelling it, is very probably correct. It would be interesting to know whether the intermediate spiracles are modified in any way; but the material at my disposal does not permit me to investigate this point. Nor do I know whether the species of *Molytria* are ever aquatic.

The specialization of the posterior spiracle in these Cockroaches affords in some respects an interesting parallel to that which occurs, in varying degree, in many Water Beetles, Dipterous larva, and aquatic Hemiptera. It is a modification which in some cases escapes notice very easily. In 1900[2] I stated as regards an aquatic Glow-worm, apparently a Lampyrid larva, taken in Lower Siam, that I could not discover any special modification in its structure to fit it for an aquatic existence. I find, however, that a very similar larva, not uncommon in Calcutta among the roots of a floating water-plant—*Pistia stratiotes*—is devoid of ordinary spiracles but possesses a star-shaped funnel which can either be extended from the posterior extremity of the body or withdrawn into it. This funnel is connected with a couple of very bulky air-tubes, which run along the sides of the body and send out fine offshoots interiorly. The latter ramify and frequently anastomose among the organs of the abdomen and thorax, so that a structure quite comparable to that found in other aquatic larvæ has been evolved. As the funnel

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[1] The identifications are those of de Saussure, who examined specimens in the collection of the Indian Museum.

[2] *Proc. Zool. Soc.*, 1900, p. 863.

is generally thrust into the air which is retained under the leaves of *Pistia stratiotes*, it is seldom possible to see it in use. The complexity and large size of the tubes are probably rendered necessary by the fact that the Beetle is liable to be detained beneath the surface for considerable periods. It is unable to sink without assistance; but when gorged with food it cannot rise readily, and is only able to crawl slowly up the stem or root of some convenient water-plant. Its ordinary method of feeding, moreover, causes it to drop to the bottom. Settling on the upper surface of the shell of any non-operculate water-snail which may approach its hiding-place, it inserts its minute head into the tissues of the animal from behind. The Mollusc retreats as far as possible into its shell and sinks to the bottom, carrying the Beetle with it. Here the latter feeds upon its victim at leisure. I have known an individual to perish, apparently because it could not rise to the surface after such a meal.

I have little doubt that this Glow-worm is the larva of some common fire-fly, possibly *Luciola vespertina*; I do not think it is that of *L. gorhami*, an even commoner species in Calcutta, the female of which is winged and abundant. The structure of the head, thorax and feet is essentially that of an ordinary larva of this genus. Possibly, however, the aquatic form may reach sexual maturity, in the case of the female, without leaving the water, and I have reason to think that the female does become mature with very little change of outward form. Specimens in my aquarium have, on several occasions, sunk to the bottom and died, after feeding for some months. Their bodies were distended. and dissection showed them to be full of eggs. Such specimens had no external genitalia, but were evidently about to undergo an ecdysis, their integument being loose and easily separated and a new integument being already formed beneath it.

17. *Notes on the Freshwater Fauna of India. No. IV.*—Hydra orientalis *and its bionomical relations with other Invertebrates.*—*By* N. Annandale, D.Sc., C.M.Z.S.

To my description[1] of *Hydra orientalis* I am now able to add the following particulars, which I think establish its position as a distinct species.

The fully expanded tentacles are at least three times as long as the body. The gonads only occur on the upper two-thirds of the body. The sexes are distinct. The normal egg is subspherical and is set with slender spines which are bifid or expanded at the tip, being more numerous and relatively finer than those on the egg of *H. grisea*. Eggs without a thickened external shell are produced under certain conditions.

I hope to publish elsewhere a more detailed account of the structure, life history and distribution of the Indian Freshwater Polyp; but it will be convenient to deal with its relations to other animals in these notes. It should perhaps be explained that I use the term "commensalism," in its wider sense, to include any well-established permanent or temporary connection between two organisms which does not involve positive injury to either. In many such cases it is impossible, with our present limited knowledge of the bionomics of nearly all aquatic animals, to say whether the connection is beneficial to both, or only to one of the organisms involved.

Commensalism.

Although symbiotic algae do not occur in the tissues of *Hydra orientalis* I have found, on several occasions, groups of minute organisms, evidently belonging to the same order of plants as those which live in other species, attached to the surface of the body, generally towards the aboral pole. Probably these are not commensal with the Polyp in any sense of the word, but their presence is interesting as suggesting the commencement of such relations as those which exist between *H. viridis* and its green cells or between certain corals and their yellow cells. In *H. viridis* the green cells migrate from the body of the parent into the egg; but this is not the case with the Turbellarian *Convoluta roscoffiensis*, in which the green colour of the organism, as Keeble and Gamble[2] have recently proved, is brought about by infection with minute algae from the outside. First settling on the external surface of an animal such as *Hydra*, such algae may have originally penetrated into the tissues by some wound or aperture, only becoming symbiotic in the true sense of the word by gradual adaptation, carried on through many generations, to a new environment.

Of animals living in more or less intimate relations with the Polyp, I have found two very distinct species of Protozoa, neither

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[1] See the Journal of this Society for 1905, p. 72.
[2] *Proc. Roy. Soc.* B. LXXVII, 1905, p. 66.

of which is identical with either of the two mentioned by Saville Kent[1] as commonly found in association with *Hydra* in Europe, viz., *Trichodina pediculus* and *Kerona polyporum*. On two occasions, one in January and the other at the beginning of February, I have noted a minute Flagellate on the tentacles of the Calcutta form. On the first the tentacles were completely covered with this Protozoon, so that they appeared at first sight as though encased in flagellated epithelium. The minute organism was colourless, transparent, considerably larger than the spermatozoa of *Hydra*, slightly constricted in the middle and rounded at each end. It bore a long flagellum at the end furthest from its point of attachment, the method of which I could not ascertain. When separated from the Polyp little groups clung together in rosettes and gyrated in the water. On the other occasion only a few individuals were observed. Possibly this Flagellate was a parasite rather than a commensal, as the individual on which it swarmed was unusually emaciated and colourless, and bore neither gonads nor buds. The larger stinging cells were completely covered by groups of the organism, and possibly this may have interfered with the discharge of stinging threads.

Regarding the exact nature of the other Protozoon observed in association with *Hydra orientalis* there is no doubt. It was a *Vorticella* which agreed in every particular with the figures of Tatem's *V. monilata* given by Saville Kent (*op. cit.* pl. XXXV). As this appears to be rather a scarce form in Europe its occurrence in India is interesting. I found several groups, of from eight to twelve individuals each, attached to the upper part of the body of a Polyp in January, 1906. In Europe the species has been taken on water plants, it is improbable that its association with *Hydra* in Calcutta was more than fortuitous. The fact that I have not taken it except thus associated proves nothing, as I have not yet made anything like an extensive search for Protozoa in the tanks. *V. monilata* has recently been recorded from Paraguay by von Daday.[2]

On two occasions, while examining living Polyps at the beginning of January, I noticed a small Rhabdocoele which appeared to issue from the mouth. I did not see it, however, actually in the alimentary canal, and possibly it may have come out from behind the body or a tentacle.

Especially in the four-rayed stage, the Polyp not infrequently attaches itself to shells of *Paludina*, and, more rarely, to those of other Molluscs. The smooth shell of this genus seems to be peculiarly attractive to temporary or permanent commensals. In the Calcutta tanks a Polyzoon,[3] a variety of the common European *Plumatella repens*, forms its colonies during the winter

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[1] *A Manual of the Infusoria*, I, p. 110

[2] *Bibliotheca Zoologica*, XLIV (1905), p. 43.

[3] See Carter in *Ann. Mag. Nat. Hist.* (3) I, p. 169, and III, p. 338. A variety of *Plumatella repens* occurs on *Paludina* shells in Europe (see Kraepelin, *Die Deutschen Süsswasser-Bryozoen* I, p. 121, pl. IV, figs. 113, 114, Hamburg, 1887).

months very commonly upon the living shell, although I have not seen them on that of any other genus and very rarely on any other support. Two other Indian Polyzoa,[1] *Hislopia lacustris* and *Pectinatella carteri*, have been taken on *Paludina* shells. The Protozoon fauna of *Paludina* shells seems also to be large. During summer and at the end of spring, *Opercularia nutans* [1] is abundant upon them; on several occasions, in January and February, I took colonies of *Epistylis plicatilis* (which is found on *Limnæus* in Europe) in the same situation and on the operculum; while the less conspicuous forms, as well as Rotifers, observed have been numerous.

It is doubtful whether this temporary association between *Hydra* and the Mollusc is of any importance to the latter. Even when the Polyp settles on its body and not on its shell (as is sometimes the case) the *Paludina* appears to suffer no inconvenience, and makes no attempt to get rid of its burden. It is possible, on the other hand, that the *Hydra* may protect it by devouring would-be parasites; but of this there is no evidence. In the Calcutta tanks operculate Molluscs are certainly more free from visible attack than non-operculate species. This is the case, for instance, as regards the common aquatic Glowworm, which destroys large numbers of individuals of *Limnophysa*, *Limnæus*, etc. If it has been starved for several days in an aquarium it will attack an operculate form, but rarely with success. Similarly *Chætogaster bengalensis* attaches itself exclusively to non-operculate forms. In the one case the Polyp could do very little against an adversary with so stout an integument as the Insect, while, in the other, it is doubtful whether the Worm does any harm to its host. The Polyp would afford very little protection against the snail's vertebrate enemies or against what appears to be its chief foe, namely, drought. As the water sinks in the tank non-operculate species migrate to the deeper parts, but *Paludina* and *Ampullaria* close their shells, remain where they are, and so finally perish, being left high and dry, exposed to the heat of the sun.

On the other hand, the association is undoubtedly useful to *Hydra*. The mud on the shells of *Paludina* taken on floating objects shows that it comes up from the bottom, to the surface, probably going also in the opposite direction. Moreover, the common Calcutta species (*P. bengalensis*) feeds very largely, if not exclusively, on minute green Algæ, as my observations on captive specimens show. It, therefore, naturally moves towards spots where smaller forms of animal and vegetable life abound. The Polyp's means of progression are limited, and, therefore, a beast of burden is most advantageous to it, for it can detach itself when in a favourable habitat. If specimens are kept in water which is allowed to become foul, a very large proportion of them will attach themselves to any snails confined with them. Under natural conditions they

[1] In 1906 this species first appeared in abundance during the first week in March in the Calcutta tanks. I did not see it during winter. Unlike most of its allies, it flourishes in small vessels of water kept without aeration.

would thus be rapidly conveyed to a more favourable environment. In the tanks it is far commoner to find young, four-rayed Polyps on *Paludina* than individuals with five or six rays ; but the adults of the species are far less prone to change their position than are the young.

Hydra orientalis, especially during spring, exhibits a distinct tendency to frequent the neighbourhood of Sponges and Polyzoa, such as *Spongilla carteri* and the denser varieties of *Plumatella repens*. Possibly this is owing to the shade these organisms provide.

Enemies.

A Chironomid Larva which feeds on Hydra orientalis.

The insect dealt with in the present note is common in the Calcutta tanks in the months of November, December, January, and February. It ceases to be so as the temperature commences to rise at the beginning of spring. Unfortunately, I have not been able to diagnose it specifically, but, judging chiefly from the characters of the larva, I have little doubt that it belongs to the genus *Chironomus* although the pupa closely resembles that of *Tanypus*.

In many respects the life-history of this Indian species is very similar to that of the English forms described by Miall.[1] The eggs are set in a roughly globular mass of jelly from 5 to 10 mm. in diameter, without any very definite arrangement. The mass adheres to the under surface of a *Limnanthemum* leaf or some other floating object, but sinks if it is detatched. Its surface is sticky, and the minute particles of dirt which adhere to it may serve as a means of concealment. Embryonic development is normal and occupies at least a week.

The larva differs from those of the common European species in not having processes on the ventral surface towards the posterior extremity. At first it is quite colourless, but later it assumes, probably from its food, a pale-pink or greenish tinge. Its greatest length is about 6 mm.

The pupa could be distinguished from that of such a form as *Tanypus maculatus* by the long bristles which project from the dorsal surface of the last joint of the abdomen. The breathing trumpets are rather narrow and there are no respiratory filaments on the thorax. The suckers on the dorsal surface of the anterior segments of the same part of the body are large. The pupa clings to submerged objects with their aid ; but if they be detached from such objects, it can still remain fixed by means of the bristles and plates on its tail.

The adult is a typical little Midge with a pale-green body and thorax. In the male the latter is without markings, but in the female it bears longitudinal bars similar in extent and arrangement to those which characterize *Chironomus cubiculorum*.[2] It is,

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[1] *Nat. Hist. Aquatic Insects*, p. 122.

[2] Very little is known of the Indian Chironomidæ or Midges. In van der Wulp's *Catalogue of the Described Diptera from Southern Asia* (1896), the genus

however, much smaller than this species. In both sexes there are a number of dark cross-bars on the abdomen.

The young larva is very active. It is frequently found wandering among colonies of such Protozoa as *Vorticella nebulifera* and such Rotifers as the gregarious Melicertidæ.

As the larva approaches maturity, it commences to build for itself temporary shelters. These are of two kinds:—(1) a silken tunnel with its base formed of some smooth natural surface; or (2) a regular tube, often adhering by a short stalk on its base either to a smooth level surface or to some rounded object, and covered on the sides and back with more or less distinct projections. I cannot detect any difference between the larva which makes the tunnel and that which makes the tube, and my captive specimens have never made the latter while under observation. I am inclined to think that the character of the shelter is partly a question of food-supply and partly due to the imminence or non-imminence of an ecdysis.

It is easy to watch the making of a tunnel by a larva in captivity, for it usually chooses the side of the aquarium as the base of its shelter. Having settled on a suitable spot, after stumping along the glass in all directions for some minutes, it becomes stationary. Then, drawing its head backwards and forwards, pressing its mouth against the glass and arching its head through the water some little distance above its back and to the glass again, it rapidly weaves the anterior part of the shelter. The threads are not drawn parallel to one another, but so arranged as to form a wide and irregular mesh. The larva can thrust its head through the structure at any point, but does so seldom. As a rule the ends of the shelter are not straight but concave, as though a bite has been taken off them. This gives the occupant greater freedom of movement. When the anterior half has been completed, the larva turns round suddenly in the tunnel, doubling its body and straightening it again in so doing, and proceeds to spin the posterior half. Then it turns round again, and suddenly darting out from the entrance to half its length, it pulls in, by means of its anterior limbs, a minute particle of extraneous matter, which it dabs on to the case. It does this many times over, and then turns round and does the same for the hinder end of its shelter. Both ends are left open. The elaboration of the shelter differs greatly on different occasions.

I had frequently noticed that tunnels brought from the tank

Tanypus is not recorded from British India; but several Javanese species are noted. The larva of one common Oriental Midge, *Chironomus cubiculorum*, has been found in large numbers in the Calcutta water-works (*Ind. Mus. Notes V*, 1903, p. 191, pl. XV, fig. 5). Another larva, belonging to the same genus, inhabits the tissues of a fresh-water sponge (*Spongilla carteri*) in the Calcutta tanks. [I hope to give details of the habits of this form and of other incolæ of the sponge shortly.—N. A., 17-4-06.] I found a third very abundant at the end of January in brackish pools at Port Canning, Lower Bengal. It lived both in the tissues of a second sponge (*S. lacustris* var. *bengalensis*) and among the matted colonies of a Polyzoon. In the same pools the eggs of two species were common at the same season. In one the egg-mass was shaped like a Leech, attached at one end; in the other it formed long strings of rather irregular form.

on the under surface of *Limnanthemum* leaves had a *Hydra* fixed to them. This occurred in about a third of the occupied shelters examined. The *Hydra* was always in a contracted condition and often more or less mutilated. By keeping a larva together with a free Polyp in a glass of clean water, I have been able to discover the reason of this, having now observed the process of capture and entanglement in greater or less detail on eight occasions. The larva settles down at the base of the *Hydra* and commences to spin a tunnel. When this is partially completed, it passes a thread round the Polyp's body, which it also appears to bite. This causes the victim to bend down its tentacles, which the larva entangles with threads of silk, doing so by means of rapid, darting movements; for although the stinging-cells of *H. orientalis* are small, they would prove fatal to the larva should they be shot out against its body, which is soft. Its head is probably too thickly coated with chitin to excite their discharge. Indeed, small larvæ of this very species form no inconsiderable part of the food of the Polyp, and, so far as my observations go, they are always attacked in the body and swallowed in a doubled-up position.

When the *Hydra* has been firmly built into the wall of the shelters and its tentacles fastened down by their bases on the roof, the larva proceeds, sometimes after an interval of some hours, to eat the body, which it does very rapidly, leaving the tentacles, which still retain their vitality, in position. The meal only lasts for a few minutes; after it, the larva enjoys several hours' repose, protected by the dangerous remains of its victim. During this period it remains still, except for certain undulatory movements of the posterior part of the body, which probably aid in respiration. Then it leaves the shelter and goes in search of further prey.

Its food, even when living in a tunnel, does not consist entirely of *Hydra*. I have watched an individual building its shelter near a number of Rotifers, some of which it devoured and some of which it plastered on to its tunnel.

The tubular shelters occasionally found are very much stouter structures than the tunnels; but are apparently made fundamentally of the same materials. Structures, intermediate between them and the tunnels, are sometimes made.

They are often as much as twice as long as the larvae and have a much greater calibre. Although they can be straightened, they are usully bent, more or less distinctly, in the middle, so that they have a U or V-like form. The stalk by which they are fastened to external objects is situated below, at the junction of the two limbs. Although the tube is too densely covered with particles of dirt, short lengths of some thread-like alga and Protozoa,—for its structure to be easily seen, it has evidently an extremely loose fabric, through which the larva can thrust its head at any point. It clings to the interior of the tube (or of the tunnel) by means of its posterior legs below and of the bunch of bristles at the posterior extremity of its dorsal surface above. The latter can be raised or depressed at will by means of a special muscle. Thus it can drag the tube slowly along a

smooth surface by means of its forelegs. It may live in one tube for at least two days, during a considerable part of which it remains quite still. During this period of quiescence it probably casts its skin; but I have not been able to watch the process.

On most tubes I have examined there have been colonies of the Protozoon *Epistylis flavicans*, which is common in the tanks on the roots of duckweed during the winter months. A close examination shows that these colonies are not normal ones like those on the roots; for they appear to be rather the extremities of such colonies, broken off and entangled in stout silk threads, several being fastened together to form each group on the tube. The tubes which did not bear the *Epistylis*, bore a *Vorticella* (probably *V. nebulifera*) instead. I have not seen the larva feeding on these Protozoa, but have very little doubt that it does so, for they disappear gradually from the tube, and when they have disappeared the larva recommences its wanderings.

Thus it would seem that this larva, differing little in structure from its allies, has developed a very peculiar instinct, which enables it to obtain at once food and shelter from animals lower in the scale of structure than itself. Possibly the case is in some respects paralleled by that of the Amphipod *Phronima*, which is found in the empty tests of Ascidians; but it is at once less complex and more unusual than that of the other Crustaceans (such as *Dorippe facchino*) which carry about with them living Coelenterates as a protection and not as food.

As regards other enemies of *Hydra orientalis* I have little information. I have repeatedly noticed that individuals confined together with larvae of the Dragon Fly *coriagrion coromandelianus* (which is one of the commonest species in the tanks) have disappeared. Although I have not been able to witness an attack on the part of the Insect in this case, it seems probable that the attack is made; for the larva feeds chiefly, if not entirely, by night.

It is evident, therefore, that the nematocysts of *Hydra* do not protect their possessor entirely from the attacks of Insects, any more than those of marine Coelenterates do from the attacks of fish.[1]

Prey.

The food of *Hydra orientalis* is by no means homogeneous. Cladocera and Copepods are commonly eaten, more especially the former; but Ostracods, and occasionally even members of these other groups, are merely held for a few seconds on the tentacles and then dropped. Rotifers and minute Oligochæte worms are also eaten; but the small Turbellarians which are usually abundant in the tanks during winter, apparently escape attack. Perhaps the great part, and undoubtedly a very large part of the food consists of newly-hatched Insect larvæ, chiefly Dipterous and Neuropterous. Young individuals, as I have noted, of the very Chironomid

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[1] See Ashworth and Annandale in *Proc. Roy. Soc. Edin.* XXV, 1904, p. 3 (note).

which later preys on *Hydra* are very frequently eaten, possibly more frequently than any other species, and a common Ephemerid in its first instars fares but little better.

Food is usually taken in the early morning, before the heat of the sun has become great. This is the period when life seems to be generally most active in the tanks. In Calcutta, *Hydra* does not feed at night, but remains between sunset and dawn, at any rate when in an aquarium, with partially retracted tentacles.

18. *Notes on "Pachesi" and similar games, as played in the Karwi Subdivision, United Provinces.*—*By* E. DE M. HUMPHRIES.

A feature which cannot fail to strike the most unobservant visitor to the Karwi Subdivision is the village meeting-place.

This is usually furnished with a number of rude stone benches, formed by a horizontal, supported on two vertical slabs. These are arranged roughly either in a circular or in a square formation, reminding one of nothing so much as the remains at Stonehenge. On the surface of these slabs will often be found scored the "boards" of certain games.

During the tour season of 1904–5, I collected the rules of some of these games, so far as I was able to ascertain them in the very limited time at my disposal.

The following notes, which have no claim to be considered exhaustive, embody the substance of the information so obtained.

Pachesi.

The most familiar of these games is that known as "Pachesi."

It is played on a board marked out as in the accompanying diagram (Fig. 1).

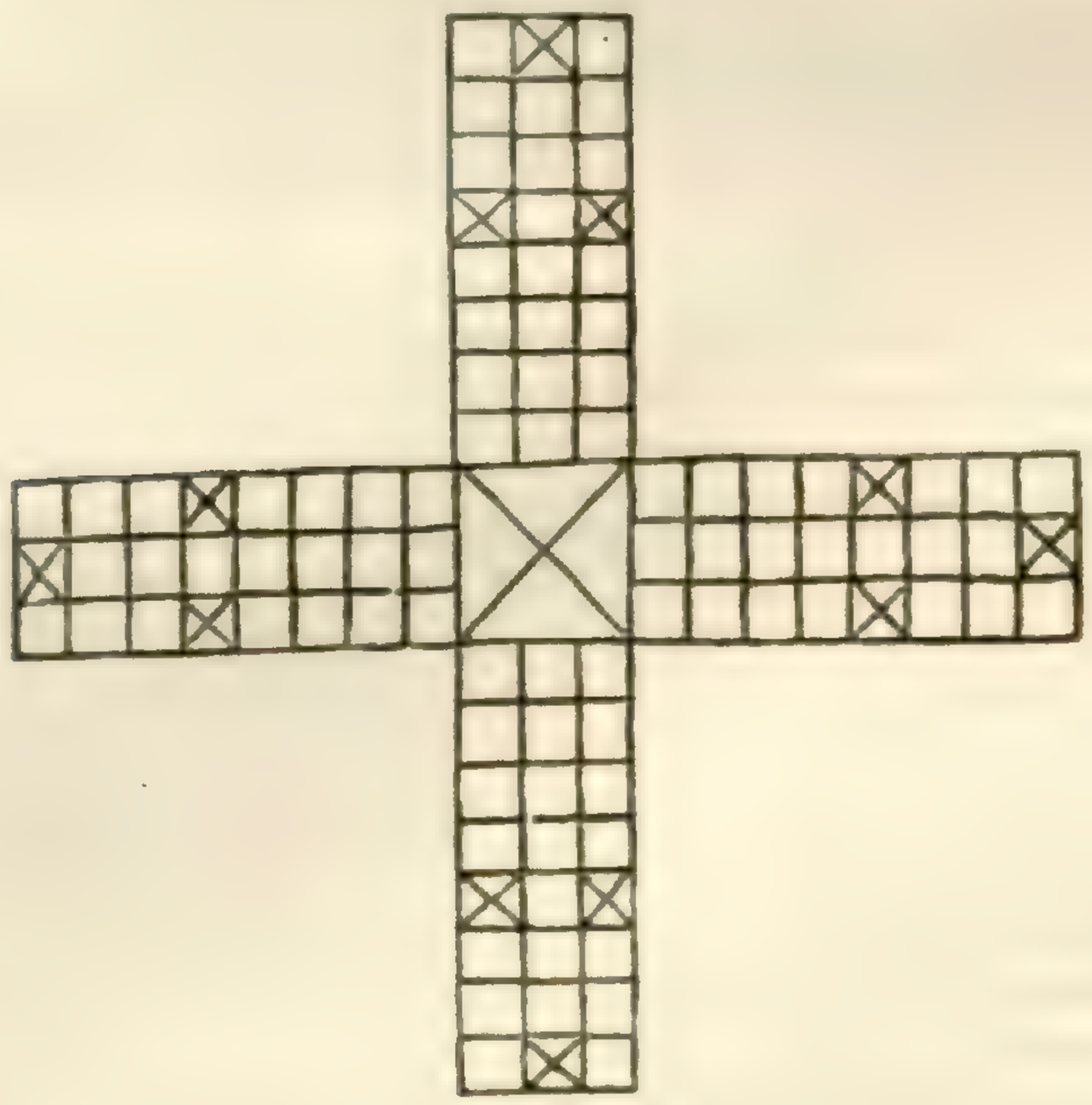

Fig. 1.

Each arm of the cross is divided into three rows of eight squares. Of these the fifth from the end of each of the outer rows, and the middle square of the bottom row are marked with a diagonal cross to indicate that a piece on one of these squares is safe from capture.

The game is played by four, but may equally be played by two, or even by three persons, each of whom has four "men," distinguished by their colours or their materials.

Each player sits opposite one arm of the cross, and his object is, starting from the centre of the board down the middle and up the left-hand row of his own arm of the cross, to move his four "men" all round the board, finally bringing them down the right-hand side and up the middle row of his own arm and landing them in the triangular space in the centre.

The first to do this wins the game.

The moves are regulated by the number of cowries which fall with the slit uppermost out of seven, which are thrown from the hand without the use of any dice-box. The following table gives the value of the various throws:—

If all 7 cowries fall with the slit uppermost, the throw counts						12
" 6	"	"	"	"	"	30
" 5	"	"	"	"	"	25
" 4	"	"	"	"	"	4
" 3	"	"	"	"	"	3
" 2	"	"	"	"	"	2
" 1	"	"	"	"	"	10
If none	"	"	"	"	"	7

A "man" may be placed on the board only when either 10, 25 or 30 is thrown.

When a "man" is so started, he is placed on the square corresponding to the number thrown, counting down the middle and up the left-hand row.

Once a "man" has been started, every throw can be utilised by pushing on a "man" for a number of squares corresponding to the number thrown.

If the square to which a "man" should be moved is occupied by one of the adversaries' "men," the latter is captured and must be removed from the board and begin its round exactly as if it had never been placed on the board at all. A piece is exempt from capture while on one of the refuges marked on the board with a cross, or when it has turned into the middle row on his way home. A player may not take one of his own "men" past a refuge occupied by one of the adversaries' pieces.

When a "man" reaches the middle row he cannot get "home," unless his player happens to throw exactly the number required to bring him there.

For instance, to a "man" placed on the fourth space from "home," a throw of 5 or more is of no use: a throw of 4 would bring him "home," while throws of 3 or 2 would not improve matters, though, if there were no other "men" on the board that he could move, such a throw would have to be utilised by moving the "man" up accordingly.

When a "man" reaches the last square of all, he has to wait till either 10, 25 or 30 is thrown. When one of these numbers is

thrown, the player has to throw again, and, if one of these numbers is again thrown, the "man" has to be removed and begin again from the beginning.

The word for "throwing" the cowries is '*pakkána*'; *i.e.*, to "cook" them.

The above represents what I understand to be the rules of the game as ordinarily played. There are, however, variations in the rules, some of them too complicated to be understood in the very short time at my disposal. For instance, I was informed in one village that, if in the course of the game, after all the pieces were on the board, 10, 25 or 30 were thrown, the player did not move, but threw again. If any of the above numbers were again thrown, he had to throw a third time. If they did not turn up, he added the amount of the second to that of the first throw and moved accordingly. If, at the third throw, one of the three magic numbers again turned up, the whole score was cancelled, but he had another throw.

Should, however, either 7 or 14 turn up, then the whole score could be counted. In that village, if all the seven cowries fell with the slit uppermost, it counted 14, and not 12 as given above. It is not unlikely that my original informants were wrong in this particular.

Chonpa.

Another variant is known as "Chonpa" or "Chaunsarh."

It is played by four persons, each having four "men," coloured respectively black, yellow, green and red. The two former play in partnership against the two latter colours.

The board is the same as that already described, with the exception that the refuges mentioned in the case of "pachesi" are either not marked at all or are disregarded, if the board is one made for both games. A single piece may, and a pair may not, be captured on any square to which a hostile piece may be moved.

The moves are regulated by throwing three dice: not, as in the case of Pachesi, by cowries. These dice are of bone or ivory and are about $2\frac{1}{2}$ inches long, marked on their long sides with the numbers (1), (2), (5) and (6).

They, too, as is usual in this country, are thrown from the hand, without the use of a dice-box.

The "men," known as *murd*, or *got*, are placed as follows:—

On the arm of the cross occupied by the player who has taken the yellow "men," are placed two yellow "men" on the second and third squares from the bottom of the middle row, and two green "men" on the first and second squares of the left-hand row respectively. Similarly on the arm of the cross to the right of him are placed two red and two yellow "men": on the arm opposite his, two black and two red "men" and on the arm to the left of him, two green and two black "men." This will be more clearly understood from the accompanying diagram (Fig. 2) which shows the board set out for the commencement of this game.

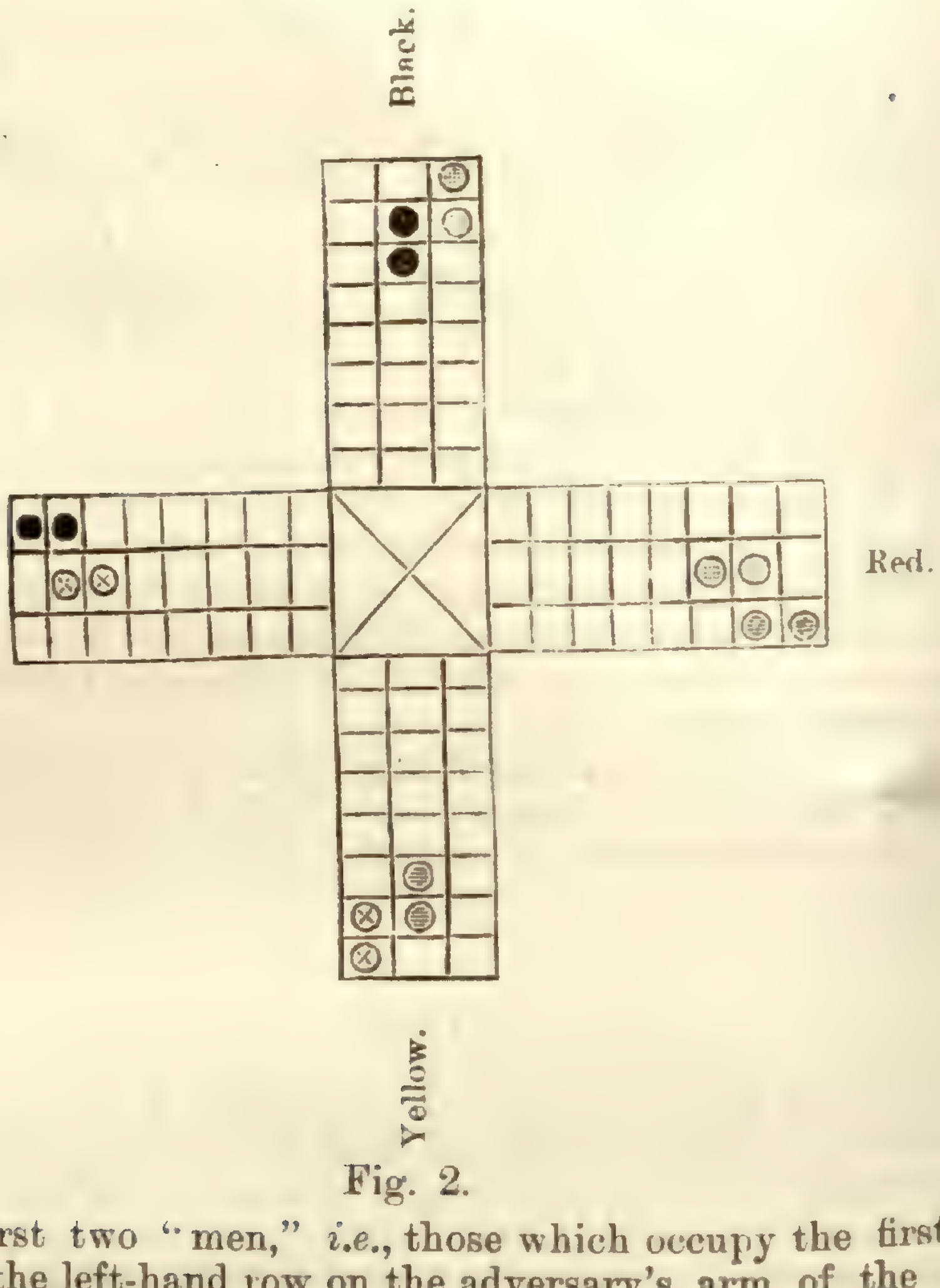

Fig. 2.

The first two "men," *i.e.*, those which occupy the first two squares of the left-hand row on the adversary's arm of the cross, always move in pairs, while the last two move singly. A pair may be moved only when a pair is thrown. If the dice all turn up different, then only one, or possibly both of the single pieces may be moved for a total number of spaces corresponding to the total thrown. If two out of the three dice fall alike, then the pair may be moved for the pair thrown and the single piece for the single throw. A throw may be split up and used to move on two or more pieces. For instance, if a 6, a 5 and a 1, are thrown, then each of the two single pieces may be moved on 6 places, or one may be moved 5 places and the other 7, and so on.

When three "men" come to occupy the same space, if all three dice turn up alike, then each of these three "men" can be moved forward for double the number of spaces shown by the dice, *i.e.*, if three sixes are thrown, then each of the three "men" can be moved forward twelve spaces.

When a "man" has reached the middle row on his way "home" he cannot reach "home" unless the exact number required is thrown. When, however, the last "man" has reached the second, third, or perhaps other squares in this row, the thrower is at liberty to score on two dice only, or even on one, as he may find convenient.

When a player has got all his own pieces, "home," he uses his throws to help his partner.

Rang.

Another form of the game is known as "Rang." It is played by two persons. Of these one takes the black and the yellow: the other, the green and the red. They sit opposite each other and each takes two arms of the board. Whichever colour a player starts with, he must get all the men of that colour "home" before starting those of the other colour.

Ahtarah Gutti.

Far more common, however, even than Pachesi is the game known generally as "Ahtarah Gutti" and also as "Bazi Mar," "Tichha" or "Bangala."

It is played on a board of 37 spaces, arranged as in the accompanying diagram (Fig. 3).

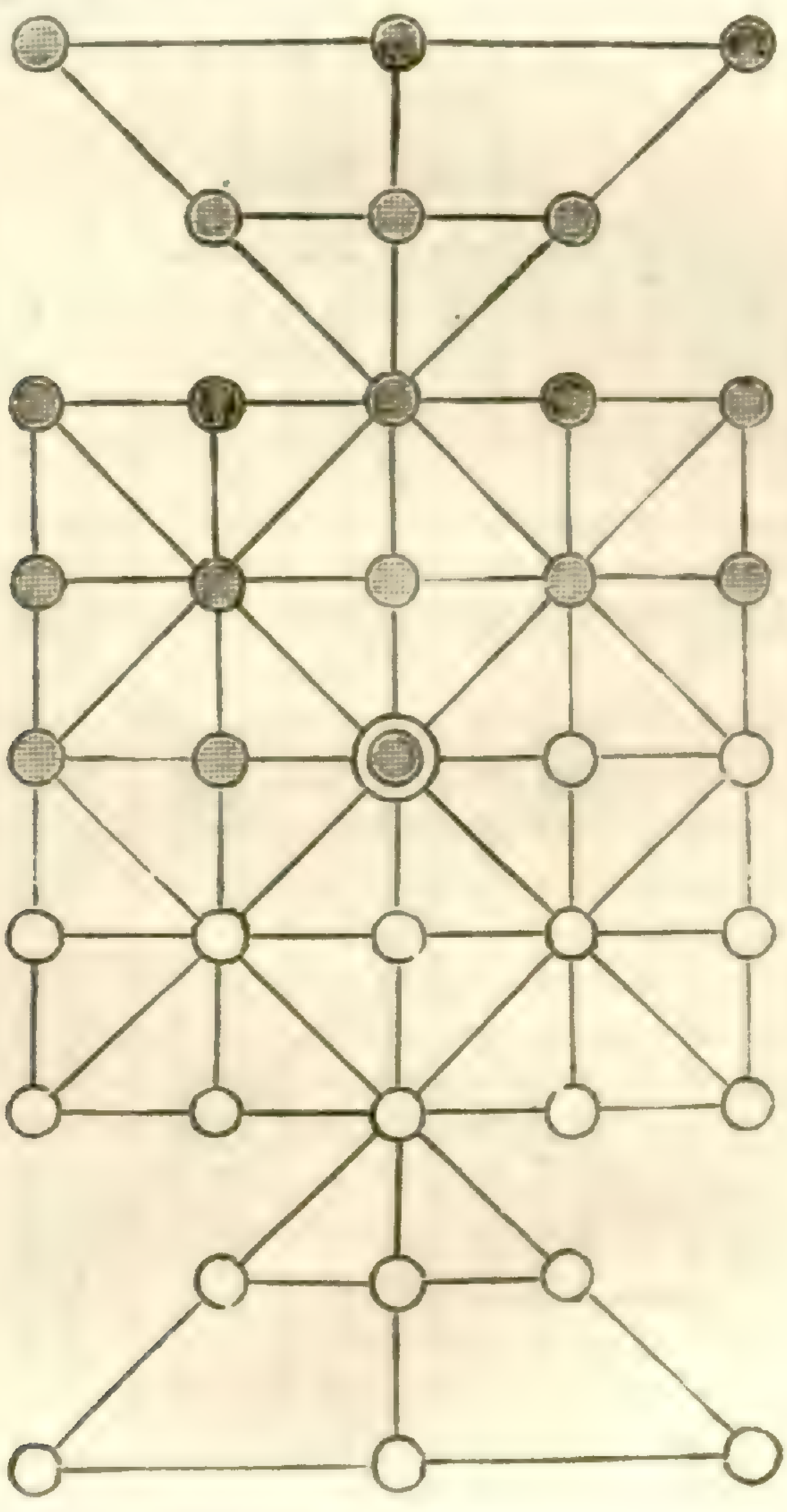

Fig. 3.

Each of the two players has 18 "men," represented, as usual, among the thrifty villagers, by pieces of kankar on the one, and of tiles on the other side. The middle space is left vacant, and the player having the first move must move a "man" on to that space.

The moves are much the same as those of a king in draughts, *i.e.*, a piece can be moved one space at a time in any direction, backwards or forwards, provided that the space to which it is sought to move it is vacant and is in the same rank, file or diagonal as that from which it starts. Captures are made, as in draughts, by leaping over the piece to be captured in any direction, provided that all three spaces are in the same straight line. Any number of pieces may be captured in succession in one move. In no part of the board is a piece safe from capture: not even in its own bungalow, as the triangular excrescences at either end of the board are called.

For obvious reasons it is considered advisable to occupy the spaces along the edges of the board, and particularly those at either extremity of the horizontal diameter of the original square.

The game is decided when one player has succeeded in *capturing* all his adversary's "men."

Kowwu Dunki.

There are several variants of this game. Of these, one, known as "Kowwa Dunki," is played on a board of 21 spaces, arranged as in the accompanying diagram (Fig. 4).

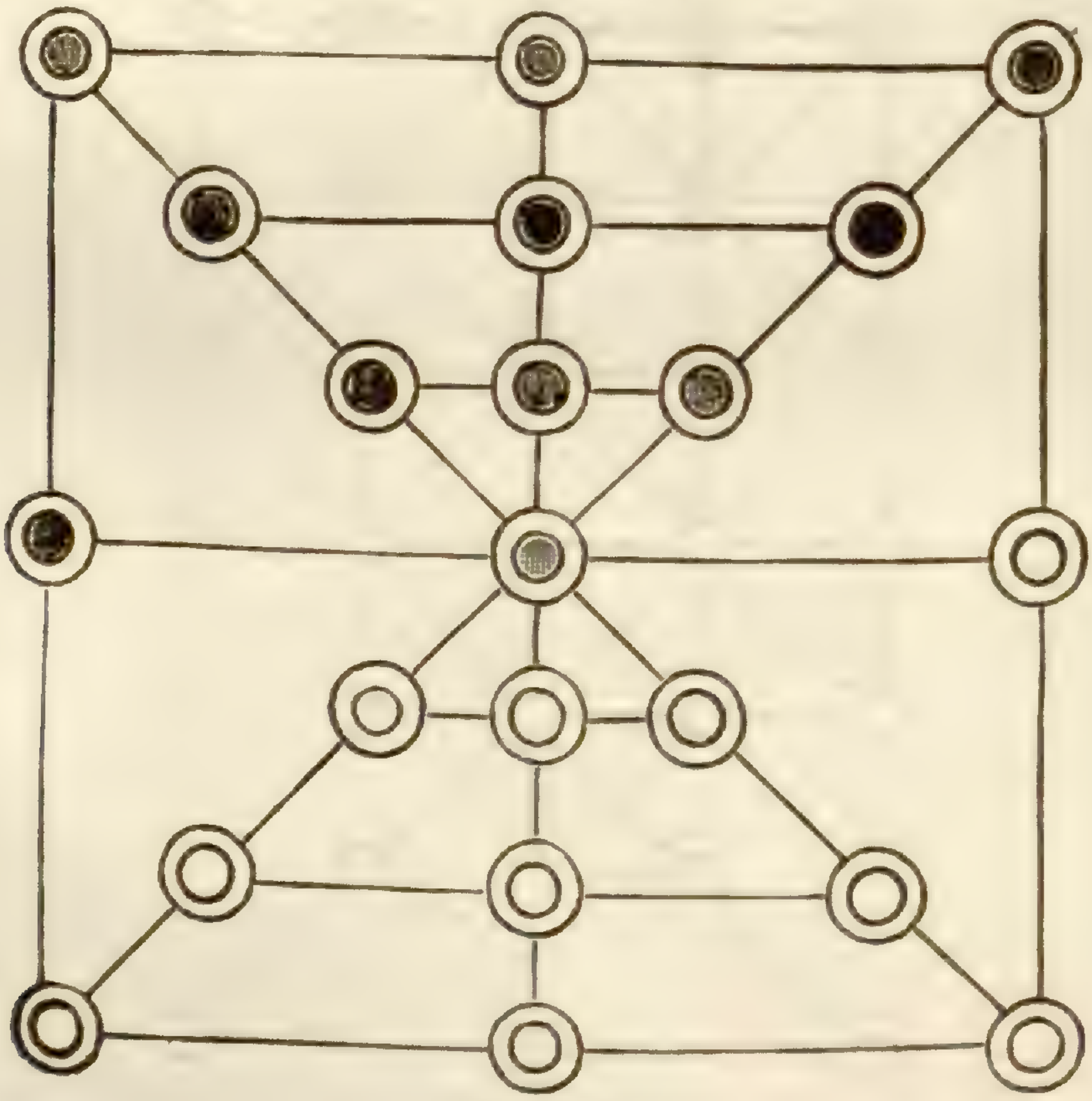

Fig. 4.

The same game is played at Bargarh on a slightly different board, as shown in the accompanying diagram (Fig 5).

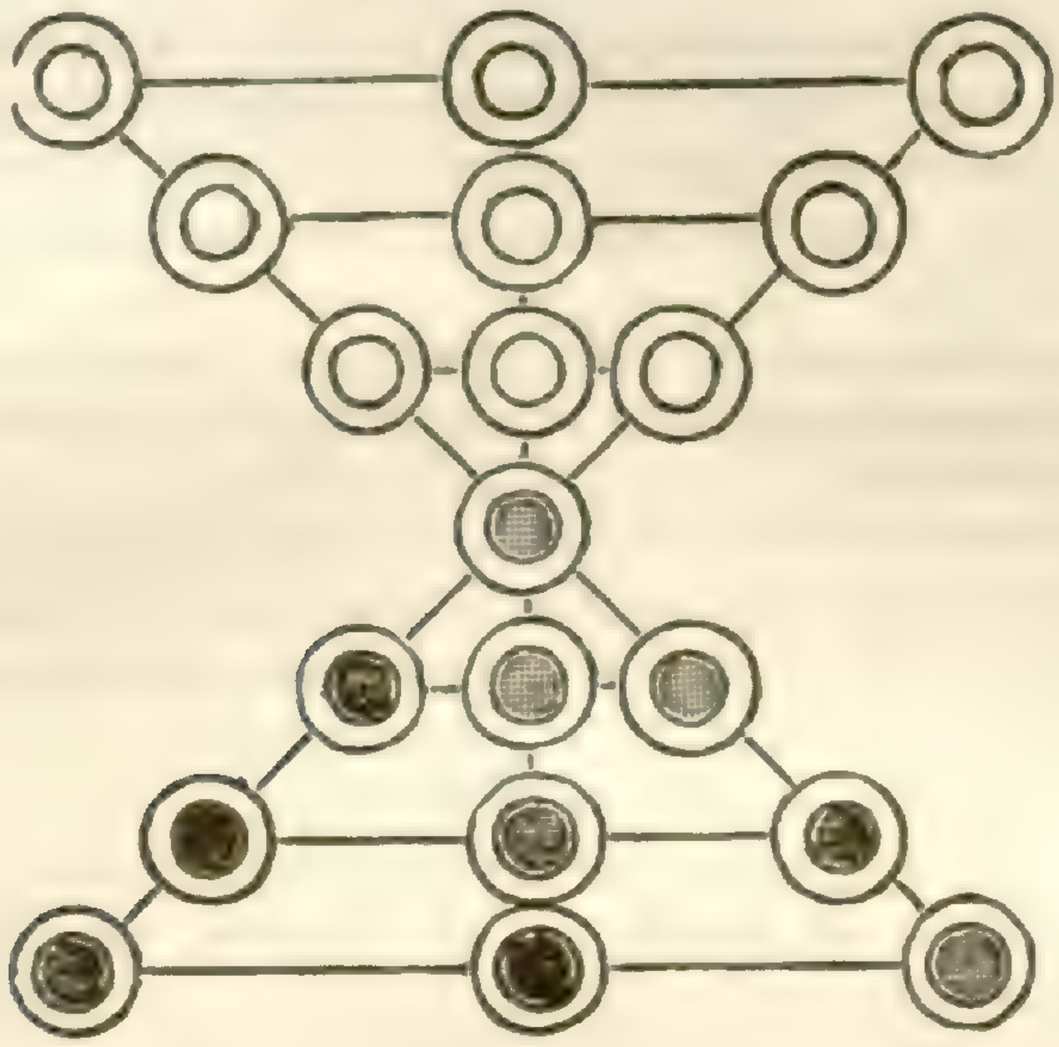

Fig. 5.

The rules of both these games are the same as those of Ahtarah Gutti.

Bagh Gutti.

Yet another variant is that known as "Bagh Gutti."

It is played by two players on a board of 25 spaces, arranged as in the annexed diagram (Fig. 6).

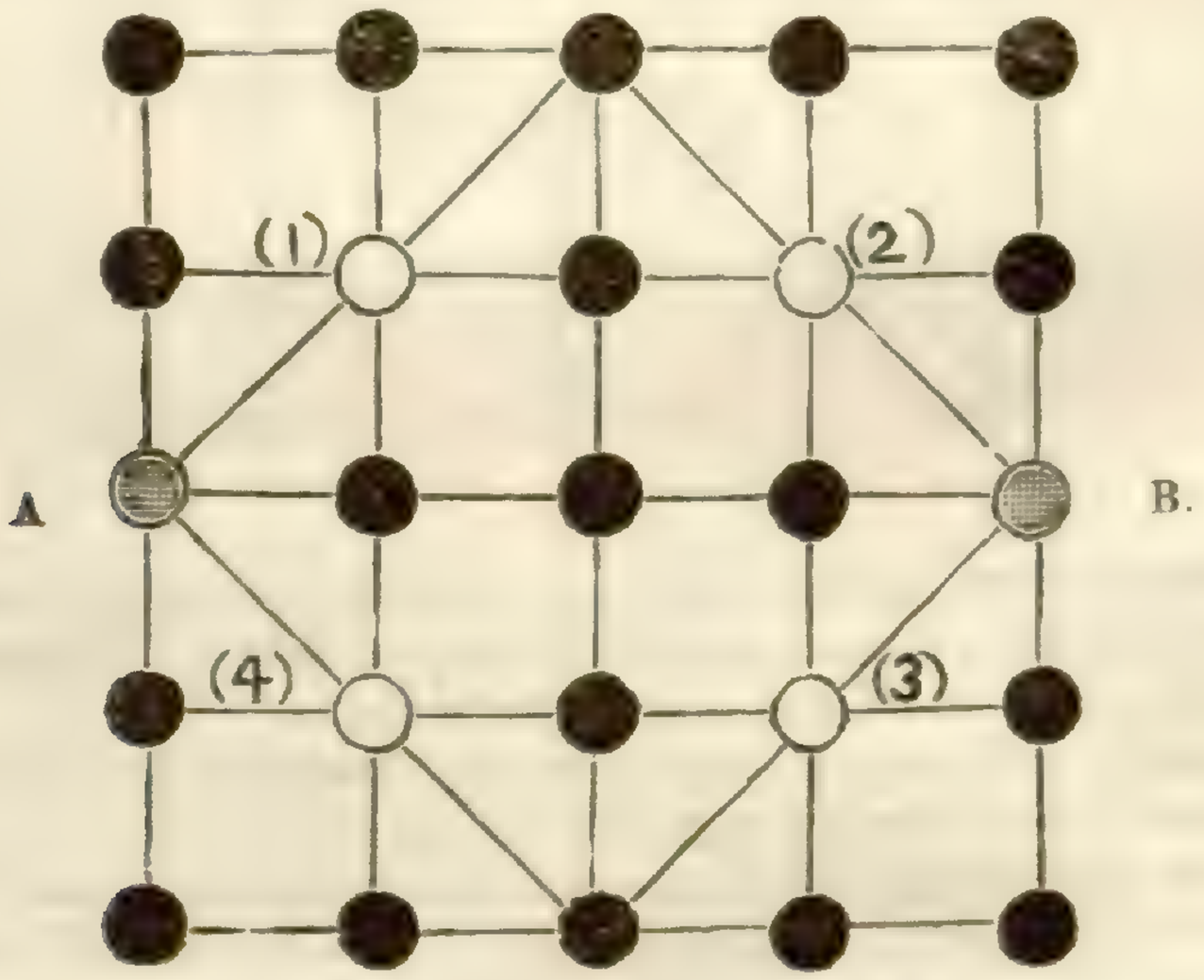

Fig. 6.

On A and B are placed two large pieces, usually of kankar or tiles. These are called *bagh* ("tigers"). The other player has 20 smaller pieces. These he places, five on each of the spaces numbered (1), (2), (3) and (4).

His object is so to surround the "*baghs*" as to prevent them from moving in any direction: while their object is to capture all his "men."

The player with the 20 "men" has the first move. He takes one piece from any of the four heaps and moves it on to any contiguous space in the same rank, file or diagonal. He may move one space at a time in any direction, provided that the space to which he moves is vacant.

The *bagh* then moves. He may move one space at a time in any direction, and captures, as in draughts, by leaping over the piece to be captured.

He can, however, take only one "man" at each leap, no matter how many men there may be on the space over which he leaps. He may capture any number of "men" in succession.

Sujjua.

Another very popular game is that known as "Sujjua."

It is played on a board of 24 spaces, as in the annexed diagram (Fig. 7).

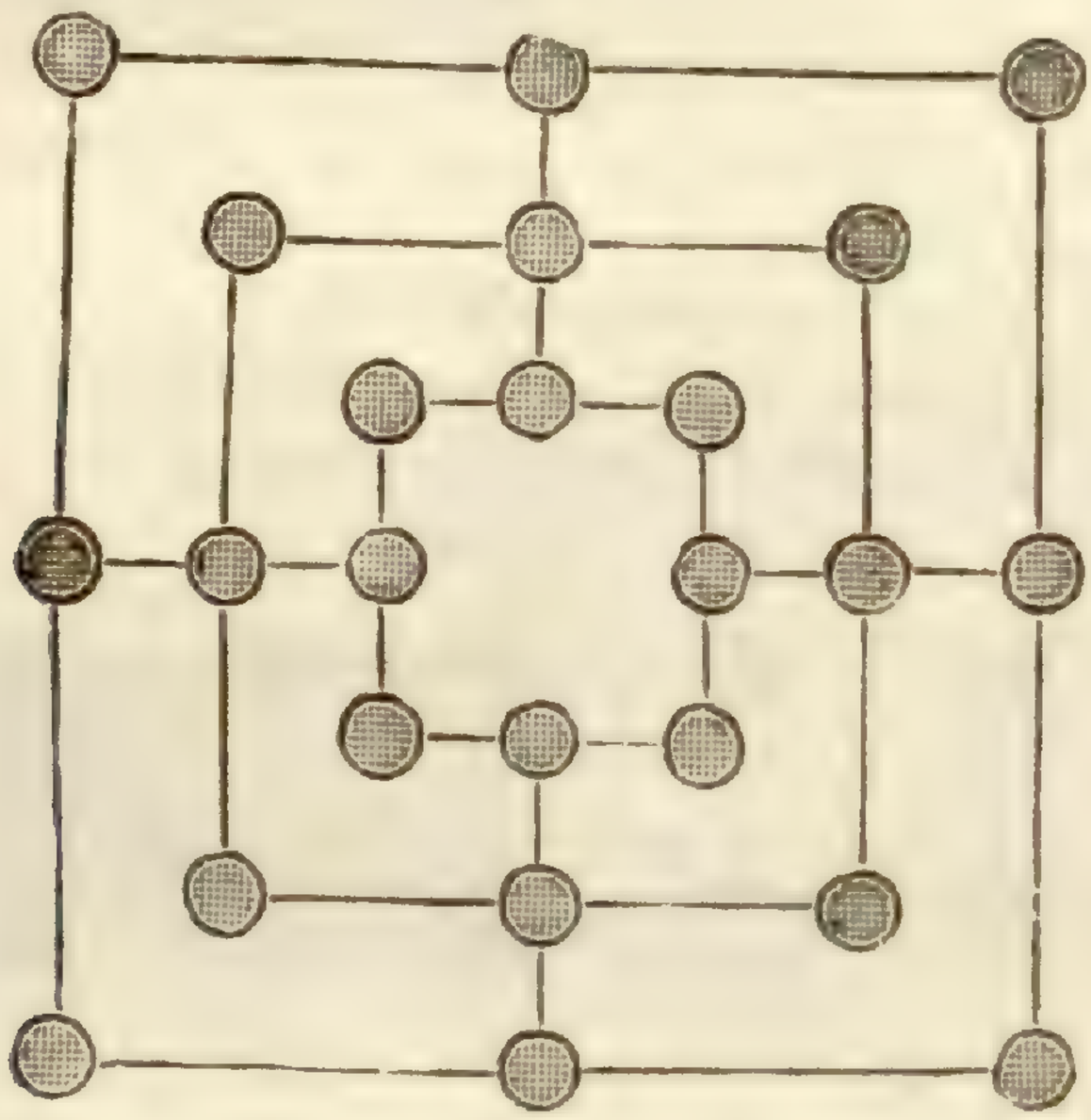

Fig. 7.

There are two players, each of whom has nine "men." The latter are usually represented, one the one side by pieces of kankar; on the other side by pieces of brick or tile.

The object of each player is to get three of his own "men" in a row, before his adversary can succeed in doing so.

When the game commences the board is clear and the players move alternately, each commencing by placing one of his own men on the board in any vacant place. After the first move, the player may either place another "man" on the board, or may move a piece already on it one space at a time in any direction, provided that the space to which he wishes to move it is vacant.

This very closely resembles the old English game of "Nine Men's Morrice."

Quite recently, on visiting a ruined Chandel temple known as the "Baldewa" close to the railway line, about two miles from the Karwi railway station, I found the "board" of this game marked on one of the vertical sides of a slab in the wall of the inner shrine. It was impossible to resist the conclusion that the game had been played on that stone before it had been used for the building of the temple.

Pachgarhwa.

Another game, which appears to be more popular than its intrinsic interest would seem to merit, is known as "Pachgarhwa."

It is played by two persons, who take opposite sides of a board of ten spaces, arranged as in the accompanying diagram (Fig. 8).

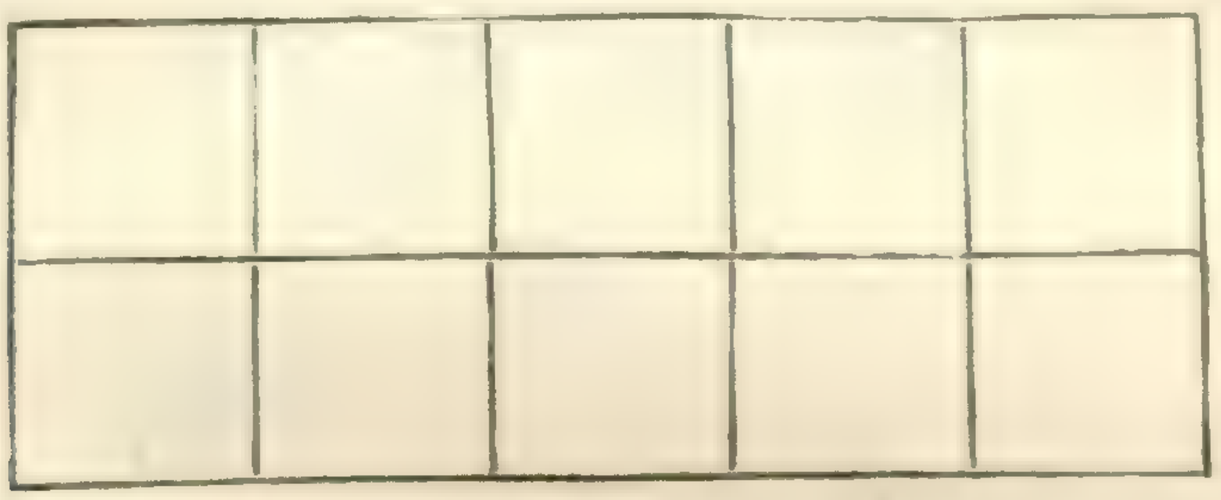

Fig. 8.

The game commences by each player placing five pieces of kankar or similar material on each of the five spaces on his sides of the board.

There is no distinction in size, colour or material between the "men" of either player.

When the board has been thus set out, the player whose turn it is to move takes up the five pieces from any one of his spaces and proceeds to work round the board from the space to the right of that from which he has just taken the pieces. He drops a piece on each space, whether of his own or his adversary's, as he proceeds.

When he has thus exhausted his five "men," he takes up the pieces on the sixth space and continues the process, until he happens to deposit his last "man" on a space, the next in order to which is vacant. When this occurs, he takes as many pieces as may be on the space immediately beyond the vacant one. His turn then is over, and his adversary proceeds to move in the same way, but in the opposite direction.

Thus the game, which is well-nigh interminable, goes on until all the pieces on the board are exhausted. Even then it does not stop, but begins again by each player filling up as many spaces as he then has multiples of five in his possession. If one player has, say, three, and the other two "men" over, then each has an interest in one square proportionate to the number of pieces placed by him on it.

By that time things began to get complicated and I was unable to discover how, if ever, the game did end.

Kowwa Dand.

There remains a kind of "Solitaire," known as "Kowwa Dand."

I had great difficulty in learning the rules of this game, as the man who gave me the diagram had forgotten them, and the *patwari*, the only man in the village who knew the game at all, had not played it for years.

It is played by one person on a board of ten spaces, arranged as in the subjoined diagram (Fig. 9).

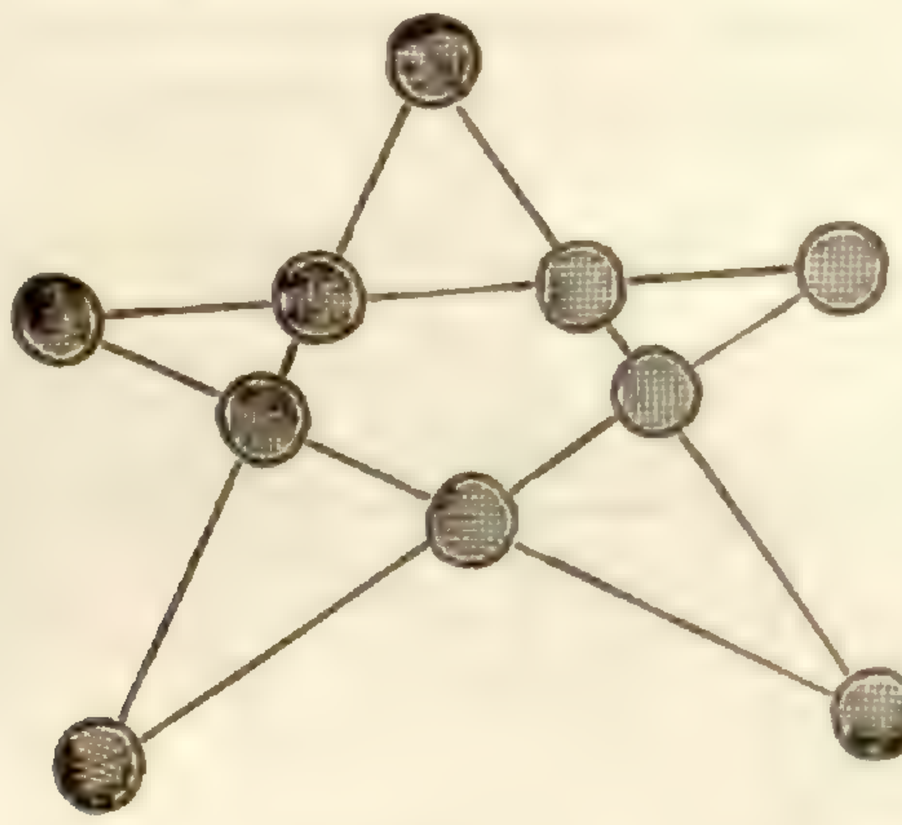

Fig. 9.

The object of the player is twofold. He has first to get all his nine "men" on the board, and then to get all but one off again.

The moves allowed are as follows :—

(1) When placing the "men" on the board, they may be moved from any one space to the next but one in the same straight line, provided that it be vacant. It is permissible to leap over an intervening "man."

(2) When removing the pieces from the board, they are taken, as in draughts, by leaping over the piece to be captured on to a vacant space in the same straight line.

Rang Mar.

Although I have not given much time to the study of card games, yet there is one such game played in the subdivision, which deserves mention. It is known as "Rang Mar."

It is played by three persons with an ordinary pack of cards.

The two of diamonds is taken out, in order that the pack may be divisible by three, and the cards are then dealt out to each player as in whist. The player who happens to hold the ace of spades must play it, and each of the others must follow suit, if possible.

After this forced lead, which, of course, wins the trick, as the ace is, for the purposes of this game, the highest card, the leader may open any suit which he prefers. The game then proceeds very much as when "No Trumps" are declared at bridge.

Each player plays for his own hand alone, and the game is decided by the number of tricks scored.

"Points," I presume, are settled by mutual agreement before commencing to play.

I asked my informant what was the penalty for a revoke. He did not understand this at first, but when a pack of cards was produced, I showed him how, quite by accident, of course, such a thing might happen.

He had evidently not given the subject much thought and was not at first aware of the advantage which might be gained by such an accident.

When this was brought home to him, he remarked that, if such a thing were "detected" that trick would not be allowed to count.

19. *On the Hindu Method of Manufacturing Spirit from Rice, and its scientific explanation.—By* J. C. Ray. *Communicated by* Dr. P. C. Ray.

To the student of history and to the student of science alike, the method of manufacturing alcoholic spirit from rice, which is followed in some parts of Bengal, presents many interesting features. The Hindus are proverbially conservative in their principles and actions, and any practice found described in an old Sanskrit author may be expected to prevail up to the present day even though the circumstances may have altogether changed. Moreover, the manufacturing process which is followed for profit and found remunerative is not changed with change of empires and altered economic conditions. It is a fact worth repeating that drinking was not absolutely prohibited in ancient India, and that on such occasions as rejoicings after a victory the soldiery freely indulged in alcoholic liquor, though Manu, the ancient moralist and law-giver of India, condemns the use of *surâs* or distilled liquors. Three kinds of liquor were known during his time, *viz.*, *Gouri* prepared from molasses, *Mádhvi* from the sweet flower of *Bassia latifolia*, and *Paishti* from rice and barley cakes. Of these three the last one—*Paishti*—was reckoned as the most common. The *surâs* were included under a generic term, *madya*, meaning every kind of alcoholic drink. The word *Kohala* occurs in Suśruta, a Sanskrit medical treatise at least as old as the 5th century A.D. It means there a particular spirit made from powdered barley. Another word *Jagala* occurs in Suśruta and in a much earlier work called Charak where *Kohala* is not found. *Jagala* means a kind of rice-beer. It is well known that Hindu physicians were at one time invited to reside at Bagdad, and were court physicians during the Caliphate. Hindu medical works were studied and translated by Arabian scholars into Arabic. It is, therefore, probable that the Arabic word *Alcohol*—the same as the English word—had an Indian origin.[1]

From this brief historical sketch it appears that the art of fermenting starchy and saccharine substances was understood and practised in India. There is no reason to believe that the Indian

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[1] The late Prof. Monier Williams in his Sanskrit-English lexicon derives the Sanskrit word *Kohala* from *ko* and *hala* (?) as in the Sanskrit word *kutâhala*, and gives the following meanings:—(1) speaking indistinctly; (2) a sort of spirituous liquor; (3) a kind of musical instrument. These three meanings are more or less associated with drinking parties. Vichaspati, an Indian lexicographer, derives *Kohala* from *Ku* = the earth and *hala* to defy—meaning that which makes a man defy the world. A better derivation is perhaps from *Ku* earth or earthly or bad, *hala* poison. Cf. *Haláhala* = *hala* + *á* + *hala* = venom. *Kohl* in Arabic means a collyrium or antimony reduced to a fine powder, used for the eye. The origin is, however, unknown. English authors derive the word alcohol from *al* Arabic *the* and *cohol* from Hebrew, meaning collyrium for the eye. But the mixed Arabic and Hebrew derivation appears to be far-fetched.

distillers have greatly deviated from the old lines. We may, therefore, take the method described below as essentially indigenous.

II. *Description of Method.*—In Orissa, the bulk of the spirit consumed by the poor people is manufactured from rice. The following description applies particularly to the method followed at the Central Distillery situated at Cuttack and controlled by Government [1]:—

Husked rice called Átap (*i.e.*, sun-dried) is first of all softened in moist steam. For this purpose water is boiled in a large earthen vessel (*hándi*) placed over a fire. Upon this *hándi*, is placed and luted with stiff clay another having a pretty large hole at the bottom. The hole is covered with a piece of coarse cloth, and upon this rice previously washed carefully with water is laid. The mouth of this second *hándi* is partially covered by means of a wicker-work basket. The steam from boiling water below rises through the moist rice above and softens the grains. The steaming is usually done in the morning and takes about half an hour for each charge of rice. The grains swell up, but are not allowed to form a paste. The steamed rice is then put in a heap when the heat and moisture complete the softening of the grains to their core. Towards evening the rice is thoroughly mixed with powdered *Bákhar*—a mouldy vegetable composition prepared and sold by a low-caste people of the hills of Orissa in the form of small balls about the size of walnut. The proportion of *Bákhar* to rice is about three *chhittaks* of the former to half a *maund* of dry rice, *i.e.*, about one part in 100. The rice is then placed in a basket for about 24 hours. During this period the temperature of the rice slowly rises several degrees above the air temperature. On one occasion I found the temperature to rise 10° F. from 84°F. to 94°F. The rice is now spread on an earthen platform, about two feet high, in the form of circular cakes about a *seer* (2 lbs.) in weight and an inch thick. In a day the temperature again rises, and the rice grains begin to be gradually entangled in the filaments of a mould fungus. In three or four days the grains become so far entangled that the cakes can be lifted without destroying their shape. They are now piled up one above another and left in this state for another period of four or five days. During this the mould becomes black and each grain of rice densely coated with it. The cakes are now put in large earthen vats, and water poured in. On the following day an equal weight of fresh and steam-softened rice is added. The rice for this purpose is more fully softened than that meant for cakes, by adding a certain quantity of water to it during steaming. The vats are jars of unglazed pottery of capacities of 32 to 40 gallons. These are half-buried under the earthen floor of a thatched shed. The proportion of water added is 20 gallons for each *maund* (82 lbs.) of rice caked and fresh (uncaked), *i.e.*, about $2\frac{1}{2}$ parts of water to one of rice. Previous to charging the vats they are fumigated by burning straw

[1] Since last year the preparation of rice-spirit has been discontinued.

in them. The mixture of rice and water is kept in the vats for 8 to 10 days according to season, longer time being necessary in winter than in summer. After the fermentation that takes place in the vats has ceased, this being ascertained by noting the cessation of bubbles of gas and clarification of the upper portion, the wort is distilled in earthen stills. These consist of two large jars, one forming the alembic and the other the receiver, their heads being connected by means of two tubes of straight pieces of bamboo. The receiver is placed in a tub and kept cool by sprinkling water upon it. The fireplace consists of a rectangular pit in which wood is burned. Lately following the advice of Government Revenue Officers the distillers at the Central Distilleries have replaced the pottery stills by copper ones with worms which cause a more rapid condensation of vapours.

The whole process takes 20 to 22 days. It will appear very primitive; though, judging by results, it is by no means unsatisfactory The average yield of spirit from a *maund* (82 lbs.) of rice at the Cuttack Central Distillery is about 4 gallons of Proof spirit. The maximum yield is obtained in January when it may rise to 4·5 gallons, and the minimum in October when it may be as low as 3·66 gallons. The average yield in January of the last three years (1901-03) was 4·28 gallons, and the same in October 3·85 gallons, making a difference of 0·43 gallons. These averages have been struck off from several hundreds of gallons of spirit manufactured, and may be taken as normal averages. The temperature of fermentation is not in any way regulated by the distillers, nor is the general *modus operandi* controlled by the Superintendent appointed by Government. The distillers who are servants of absentee capitalists go by the rule of thumb and do not always evince much interest in securing good profit for their masters. The masters, too, have no permanent interest in the manufacture, as licenses to distill spirit are renewed every third year and given to the highest bidders. In the circumstances the servants are the actual manufacturers for their ever-changing masters, and have no interest in modifying or improving upon the traditional method.

III. *Explanation.*—I am not aware if anyone has scientifically explained the process detailed above. nor have I had any access to the literature of the subject. Indeed, the only special literature which I could consult during my investigation consisted of (1) the Report of the Bengal Excise Commission, 1883-84, and (2) the "Brewer, Distiller and Wine Manufacturer" published by Churchill. The Report does not enter into the scientific aspect of the question, nor does it deal with the manufacture of spirit from rice as prevails at Cuttack. Churchill's handbook describes the European process which bears no resemblance to the Indian method.

In the brewing process of European distilleries barley is first soaked in water and allowed just to germinate at a suitable temperature. A soluble ferment or enzyme called diastase is formed in the grain. The barley is now heated at 122–212°F. in order to

stop germination. The barley thus treated is known as malt. Next raw material, *i.e.*, unmalted material (such as rice, potato and other substances rich in starch) is reduced to a pulp with water and mixed with a certain proportion of malt. The mixture is kept at about 140°F. for about 1–4 hours when starch is converted by diastase into dextrin and sugar (maltose). After the mixture has cooled to about 60°F. yeast is added, and the mixture kept until alcoholic fermentation due to yeast is at an end. The weak solution of alcohol thus formed is next distilled. Malted grain alone is sometimes used, as it is believed to yield a larger quantity of spirit, with greater facility and in less time. As a general rule a mixture of malted and unmalted grain is used in the proportion varying from 1 to 2 to 1 to 3, 4, even to 15. The proportion of grain to water is roughly about 1 to 4, and yeast is added to the mashed liquid in quantity varying from 1 to $1\frac{1}{2}$ per cent of the mash.

Now, in the Indian process, husked rice is used, and there is no possibility of germination of husked rice, and that at the temperature of 212°F. Yeast is never added to wort nor wash fresh or spent. All that is added to rice besides water consists of *Bákhar*. Its importance was not properly understood, though the country distillers know very well that it must be used with rice, or there would be no fermentation. Indeed, the rise of temperature of steam-softened rice mixed with *Bákhar* might lead one to guess that some sort of fermentation took place in the rice. In my preliminary experiments I kept for a few days steam-softened rice mixed with water only, and another quantity mixed with water and a very small quantity of wort from the distillers' vat, and found that there was no alcohol formed in the first case, and that a minute quantity was present in the second, the alcohol in this case probably came from the wort added. Boiled rice was mixed with water, and yeast from Toddy added. Rice did not dissolve and alcohol was not formed in any appreciable extent. So again, with a view to ascertain the necessity of caking, a series of trials were made by me on a small scale. These showed that caking of rice is as essential as the addition of *Bákhar*, and that no caking takes place without *Bákhar*. Every distiller knows that yield of spirit is low when cakes are not well formed, as is sometimes the case. I have examined the whole process and found it to be based on scientific principles.

(1) *Bákhar.*—*Bákhar* is a black and mouldy mixture of powdered rice, barks and roots of various plants. A cold infusion of powdered *Bákhar* in water was filtered and chemically examined. It had slightly acid reaction and contained maltose. Starch was boiled with water into a thin solution, and a few drops of the infusion added to it. The starch was quickly turned into dextrin. On warming the mixture the starch was turned into maltose. Hence *Bákhar* extract contains a diastase enzyme possessing the power of converting starch into dextrin and maltose. The presence of maltose in *Bákhar* is evidently due to the conversion of a portion of the starch of rice used in the preparation.

Under the microscope, *Bákhar* shows spores and a dense coating of mould fungi interweaving fragments of barks and roots of plants and of powdered rice. Pills of *Bákhar* were broken into pieces and kept moist with water for a day. There was growth of fungi which were found mostly to be a species of *Mucor*. The hyphæ are rather thin, measuring about 0·006 mm. in breadth. The spores are black or brown, spherical in shape, with asperities all over and measure about 0·004 mm. in diameter. The mould on ripe cakes was also examined and found to be the same fungus (*Mucor racemosus?*) but with thicker hyphæ. Sometimes *Aspergillus* and less often *Eurotium* make their appearance on cakes. The presence of these fungi is detrimental to good outturn and is regarded as accidental.

Formerly it was thought that the fungus (*Mucor*) grew on cakes from spores floating in the air, and the writer was once asked by an Excise officer to suggest means by which mould could be avoided or checked. It will be seen more clearly later on that it is purposely grown on rice from spores contained in *Bákhar*. I cannot say whence the spores are obtained. They may come with the barks and roots used. Probably *Bákhar*-makers add a bit of old *Bákhar* to fresh mixtures of rice and barks and thus keep up the culture of the particular fungus for their trade.

The names of the plants used and the importance of each in alcoholic fermentation are questions not yet throughly gone into. The reason is that *Bákhar*-makers keep the ingredients secret, and no attempt has been made to ascertain their scientific names. Whatever they are, there is little doubt about the general nature of the composition. This will appear from the long list of vegetable ingredients used in making *Páchani* and appended to the Bengal Excise Commissioner's Report already referred to. It is said that all the ingredients are never used at one time. Nor does it appear necessary to do so. The object of having them at all in *Bákhar* is rather difficult to understand. For the fungus can be grown on boiled rice by mixing with it a small quantity of ripe cake. Probably the barks and roots help the growth of the fungus, as we know how quickly mould appears on moist mixture of pounded barks and roots— more quickly and vigorously indeed than on boiled rice alone. It is well-known that the purer an organic substance is the less favourable it is for growth of moulds.

The plants of the list may be broadly divided into four groups according to their known general properties :—

(*i*) Some possess medicinal properties, *e.g.*, *Tribulus terrestris* (Gokhur), *Desmodium gangeticum* (Sálpán), *Uraria lagopodioides* (Chakuliá), *Solanum Jacqinnii* (Kantakári), *Hemidesmus indicus* (Anantamul), *Asparagus racemosus* (Satamuli), etc.

(*ii*) Some possess bitter principles, *e.g.*, *Andrographis paniculata* (Kálmegh), *Oldenlandia herbacea* (Khetpáprá), *Azadirachta indica* (Nim), *Justicia Adhatoda* (Básak), etc.

(*iii*) Some possess tannin, *e.g.*, *Terminalia Chebula* (Haritaki), *Terminalia tomentosa* (Piásál), *Cassia fistula* (Sondal), *Diospyros tomentosa* (Kendu), etc.

(*iv*) Some possess narcotic principles, *e.g.*, *Datura* (Dhuturā), *Plumbago zeylanica* (Chita), *Strychnos Nux-vomica* (Kuchilā), *Cannabis sativa* (Siddhi), etc.

The last-named ingredients are evidently addded in order to make weak spirit appear strong, though Dr. Warden, Chemical Examiner to Bengal Government, did not find in distilled spirit any trace of the narcotic drugs purposely mixed with wort (Bengal Excise Com's Report). The deleterious drugs are meant to be used in *Bákhar* for *Páchawi*—a country beer from rice. Boiled rice and powdered *Bákhar* are mixed together and left to ferment in a closed vessel. The liquid that exudes from the rice is *Páchawi*. It is not distilled. So the narcotic drugs exert their effect, at least partially, on the consumers who are generally low-class aboriginal tribes. *Páchawi* is a weak liquor, and cannot intoxicate a man unless drunk in excess. To the low-class habitual consumers of cheap liquor, it is an advantage to have an infusion of deleterious principles mixed with the weak *Páchawi*. Probably this was the liquor used in India in olden times, and distilled spirit from it or rice-cakes came later in use. Manu—the ancient moralist—speaks of *Surá* as the dregs of rice, &c. Likewise Âpastamba, another ancient law-giver, forbids all intoxicating drinks and food mixed with *herbs* which serve for preparing intoxicating liquors. The use in *Bákhar* of ingredients possessing bitter principles also tend to show that it was at first intended for beer only. The bitter ingredients act like hops in English beer, preserving the beer, and giving it a bitter taste. The medicinal ingredients are added with a view to enhance the medicinal virtues of beer, and also to correct any ill effects of the liquor. Old Sanskrit writers on Hindu medicine enumerate the virtues of liqueurs and cordials made with particular drugs. *Páchawi* literally means product of fermentation or putrefaction, and has no connection with *Paishti*—the *Surá* or distilled spirit obtained from rice-cakes. This definition of *Paishti* is taken from Manu and his annotators, and fully applies to the rice-spirit dealt with in this paper. This spirit—the Indian whiskey—as well as the Indian rum from molasses and saccharine flowers of Bassia, were condemned by Manu for the three higher castes, probably because the liquors were made strong by distillation, and perhaps also because distillation could only be carried out by the very low caste unclean people of distillers (the *Saundika*). Manu also mentions the use of *Bákhar*, which is called by him *Kiṇva* (from *kana*, particle or powder). The word *Bákhar* or *Bákar* I would take to be a corruption of the Sanskrit word *Balkal*, meaning bark of trees. The Bengali word *Bákal* is the same as Sanskrit *Balkal* and the distillers' *Bákar*, the terminal *l* and *r* being interchangeable in Sanskritic languages. The more colloquial Bengali word *Bákál*, which means the necessary adjuncts of a preparation, is probably derived from *Bákal* and is allied to the Arabic word *baql* meaning herbs.

(2) *Caking.*—To turn to the process of manufacture, we see that it consists of three stages, *viz.*, (1) forming of cakes: (2) brewing in vats; and (3) distillation.

The first step in the forming of cakes is the moistening and softening of rice and mixing with *Bákhar.* The rice chosen is Âtap, *i.e.*, merely dried in the sun without previous steeping and boiling in water while in the paddy. For it is superfluous to make the rice undergo the semi-softening process considered necessary in rice used for food. The rice for caking is not boiled in water, as that would partially dissolve the starch and not only cause its waste but also interfere with the growth of *Mucor* fungus exclusively. This will be seen more clearly later on.

An examination of softened rice mixed with *Bákhar* and left covered in a basket for a day, shows that it contains small quantities of dextrin but no sugar. Under the microscope, minute specks of *Bákhar* are seen adhering to the grains which are now half dry. The spores of *Mucor* begin to germinate, and as a consequence temperature of the rice rises. On the second day the fungus will be seen just spreading out hyphæ. On the third day there will be seen vigorous growth, the cakes feel warm and begin to appear greenish-black or black. By this time sporanges have formed. Some burst; spores come out and cover the cakes. The carbonization that takes place in the hyphæ makes the cakes turn black. Along with this the hyphæ become hard and brittle. The cakes when first laid out contain just sufficient moisture for germination of the *Mucor* spores and subsequent growth of the hyphæ. In a day the grains are more dried up. This produces two effects: (1) any spores of fungi floating in the air and settling on the cakes do not get moisture enough to germinate on them; (2) growth of *Mucor* is stunted, the filaments slender and the fungus comes to maturity rapidly. If rice is kept moist, there is greater vegetative growth of the fungus, and the grains of rice become spongy with the consequence that they do not easily sink into the water of vats. It will be presently seen that complete immersion in water is essential for alcoholic fermentation. As a further result of excessive moisture, the lower grains of rice remain almost unattacked by *Mucor*, Bacteria grow and an acid liquid exudes. These facts partly explain low yield of spirit in the moist months. In the course of the few days the cakes are left piled one upon another, the grains are slowly penetrated by the hyphæ, as drying proceeds from surface inwards. From this we see that very dry air is unfavourable for successful caking, and as a consequence a second minimum in yield of spirit takes place in March and April—the two driest months in the year.

Fully-formed cakes, when coarsely powdered and heated with water at 122°—140° F. for about ten minutes, dissolve partially. The solution contains dextrin, a very small proportion of sugar (about 2 °/₀), and diastase. One part of cake can convert into dextrin 100 parts of starch in solution with water at 86° F. in about 10 minutes, and 200 parts of starch at 104° F. in about 5 minutes. One part of cake can quickly convert into sugar 20 parts of starch

solution if heated to about 200° F These results of experiments conclusively prove that *Mucor* growing on soft and half-dry rice changes its albuminoid into diastase and its starch into dextrin and sugar.

Hence *Bákhar* may be defined as a *Mucor* spore ferment, and fully-formed cake as malt.

(3) *Brewing*.—Let us now turn to the changes that take place in vats charged with fully-formed rice-cakes and water. The grains of rice are disorganised and fall into pieces. The hyphæ are more or less destroyed and broken into minute fragments. Some of these fragments show the remarkable phenomenon of budding. This is, however, rare. The usual case is that most of the spores submerged in water swell up and germinate, each sending out a thin filament. The brownish spores germinate in twenty-four hours, the more black ones take much longer time. The filament produced is filled with granular protoplasm which soon collects into numerous minute parcels. Dividing septa separate the parcels into cells which multiply with great rapidity by budding. These cells—*Mucor-Torulæ*—have the power of se ting up alcoholic fermentation in a sugary fluid just as Yeast-Torula. In appearance, *Mucor-Torula* strongly resembles Yeast-Torula, and may be easily mistaken for the latter. The only sure way of distinguishing between them is to grow them on boiled rice. *Mucor-Torula* will germinate there and cover the rice with a luxuriant growth of cottony filaments, while Yeast-*Torula* will not of course give rise to the mould. *Mucor-Torula* is an elliptical or oval cell, generally 0·002–0·003 mm. wide, and twice as long. When fully formed, it shows a round and comparatively large nucleus.

In a wort two or three days old, there are seen myriads of *Mucor-Torulæ* and of course Bacteria. As a consequence of intramolecular respiration, temperature of the wort commences to rise about the third day and continues high till about the seventh. On the fourth day the wort looks like rice porridge, becomes acid, and contains about 2 per cent. Proof spirit by volume. About the seventh day Bacteria become less numerous than before. The proportion of alcohol has by this time risen to 8 per cent. as Proof Spirit by volume. The proportion of acid has also increased to about 1·5 per cent. (as acetic acid). About the tenth day bubbling of carbon dioxide ceases, and the upper portion of the wort becomes clear. There is dextrin, but generally no sugar; and the dregs at the bottom consist of minute fragments of the cellulose testa of rice. The proportion of alcohol is now at its maximum, usually amounting to about 16 per cent. as Proof spirit by volume.

Such is briefly the history of brewing. The diastase enzyme present in cakes brings about saccharification of starch, not only of that present in cakes but also of that of the fresh-boiled rice added to them. At no time there is much maltose in wort, showing almost simultaneous conversion of starch into maltose and the latter into alcohol. I have not followed the line of enquiry into any possible symbiotic action of the *Mucor* species and Bacteria

which are always found together in *Bákhar*, in cakes, and in wort. Leaving that intricate question aside, we see that the entire process of fermenting rice for spirit is carried on with the help of a *Mucor;* the vegetative stage being accountable for saccharification of starch, and the reproductive stage under the abnormal condition of immersion in water for the subsequent conversion of sugar into alcohol. The Chinese are also said to use a species of *Mucor* in fermenting rice for spirit. The Japanese are said to use an Aspergillus in the fermentation of rice for *saké*. It seems that the three Asiatic rice-eating people have taken advantage of mould fungi for manufacture of rice spirit.

(4) *Yield of spirit.*—According to Harmstadt, 100 lbs. of starch yield 35 lbs. of alcohol, or 7·8 gallons of Proof spirit. ("The Brewer," etc. J. A. Churchill.) Rice contains 78 per cent. of starch. Therefore, 1 *maund* of 82 lbs. rice may be expected to yield 5 gallons of Proof spirit.

We have seen that the average yield of Proof spirit from 82 lbs. of rice at the Cuttack Central Distillery is about 4 gallons. The maximum is obtained in January when it may be as high as 4·5 gallons, and the minimum in October when it may be as low as 3·66 gallons. The following table shows the average yield of Proof spirit, mean temperature, and mean humidity in the different months of the year at Cuttack:—

Months.	Average of the last three years. (1901-03)	Mean temperature.	Mean humidity.
	Gallons.		
January	4·28	72°F.	65
February	4·09	76°F.	63
March	4·01	83°F.	62
April	4·18	88°F.	62
May	4·14	89°F.	65
June	4·00	86°F.	74
July	4·18	83°F.	81
August	3·95	83°F.	81
September	3·87	83°F.	82
October	4·19	81°F.	75
November	4·19	75°F.	75
December	4·18	70°F.	66

[The mean temperature and humidity are taken from Blanford's "Climates and Weather of India" (Macmillan)].

The formation of cakes and wort takes place in thatched sheds open at one side. There is great range of air temperature at Cuttack, the mean highest being 110°F., and the mean lowest 51°F. As the temperature of fermentation in cakes and in worts is not in any way regulated, it is absurd to expect the same yield in every month of the year. The yield, however, does not vary with

the air temperature alone. It varies also with the humidity of the air, as will be seen from the table.

It will be seen that pretty low temperature and low humidity are favourable for good outturn, while high percentage of moisture in the atmosphere is decidedly unfavourable. There is, however, another potent factor which determines yield. The rice is subject to the attack of weevils, while it is spread out to cake. The loss in weight is not inconsiderable in the hot and moist months when the grains are most attacked. In winter weevils are generally fewer, and in windy days may be almost absent. The loss in weight due to the ravages of weevils has not been estimated; but judging from their number and the nature of attacked grains, it must be pronounced heavy.

Besides the losses due to defective fermentation and ravages of weevils, a certain proportion of alcohol is always lost with the spent wash. The proportion varies within certain wide limits. Sometimes the distillers stop distillation at an early stage when only about $\frac{1}{5}$th of the wort has been collected as distillate. I am aware that, if distillation be carried on to remove the last drop of alcohol contained in a wort, the spirit becomes very rich in fusel oil and unfit for human consumption. The fact, however, remains that a certain quantity of alcohol is wasted with the spent wash. I distilled small quantities of wort ripe for distillation and also quantities of spent wash, and found that 0·3 to 0·5 gallons of Proof spirit for every 82 lbs. of rice fermented are usually lost. Out of five samples examined I found, in one case, that the spent wash contained only a minute quantity of alcohol. Here are some of the results :—

(1) *Wort examined on the 12th day (3rd May 1904) and considered fit for distillation.*—A small quantity was distilled, and it showed 11 per cent. Proof spirit. The total volume of the wort formed from 82 lbs. of rice was $26\frac{1}{2}$ gallons. Hence it could yield, if all the alcohol were drawn off, 3·92 gallons Proof spirit. The actual quantity drawn at the distillery was 3·6 gallons Proof spirit. A rough chemical examination of the wash showed the presence of both sugar and starch in it.

(2) *Wort ready to be distilled at the distillery on 10th May 1904.*—A small quantity distilled by me on the same day showed 16·5 per cent. Proof spirit, which meant 4·37 gallons Proof spirit. The actual quantity drawn at the distillery was 3·92 gallons Proof spirit. Loss 0·45 gallons. The number of gallons of distillate collected at the distillery was only 5·4 out of 26 gallons of wort, *i.e.*, nearly $\frac{1}{5}$th). Chemical examination of the wash showed presence of starch and dextrin in solution, but no sugar.

(3) *Wort ripe for distillation.*—Cakes and rice with water put in vat on 11th and 12th May 1904. A small quantity was distilled by me on 25th May 1904. and

showed 4·05 gallons Proof spirit. The actual quantity collected at the distillery was $5\frac{1}{8}$ gallons out of $26\frac{1}{2}$ gallons of wort and gave 3·81 gallons Proof spirit. Hence loss 0·24 gallons Proof spirit.

(4) *Spent wash from the distillery.*—One hundred and sixty four lbs. of rice (2 *maunds*) gave 53 gallons of wash. Distilled at the distillery on 24th May 1904. Distillate $6\frac{1}{2}$ gallons 5 U.P , and 5 gallons 47 U.P. Total distillate $11\frac{1}{2}$ gallons $= \frac{1}{4.6}$ part of the wort. Actual yield 8·83 gallons Proof spirit. For 82 lbs. of rice 4·415 gallons Proof spirit. A very satisfactory yield. A small quantity of the spent wash distilled by me gave only a minute quantity of alcohol.

From results such as these, it appears that if the last trace of alcohol present in a wash were collected, the average yield from 82 lbs. of rice fermented in the usual way would not exceed 4·5 gallons Proof spirit.

There is, however, another factor that determines the total yield of alcohol. It is well known that acid fermentation of wort takes away a portion of available sugar from it and thereby causes some loss of alcohol. I have not had opportunities of comparing the proportion of acid formed in different seasons of the year. Indeed, most of the experiments on which my conclusions are based, were carried out in the two hot months of April and May of this year (1904), when the maximum air temperature, varying between 105°—108° F., was very favourable for acid fermentation. The following figures will, however, show the relation between the proportion of acid and alcohol in wort and spent wash.

1. *Wort. Vat charged on* 11*th and* 12*th May* 1904. *Wort examined on* 25*th May* 1904—

   (*a*) Acid (as acetic acid) ... ... 2·384%

   (*b*) A small quantity of the wort distilled, and the distillate made up with water to original volume—

   Acid ... ... 0·03%

   (*c*) The wort could yield 4·05 gallons P. S. for 82 lbs. of rice.

2. *Wort kept a month in a bottle after it had been pronounced ripe for distillation*—

   Acid ... ... 2·68%

3. *Wort prepared on* 16*th May* 1904. *Examined on the ninth day* (25*th May* 1904) *when it was not yet ripe*—

   Acid ... ... 1·64%

4. *Spent wash (referred to above) of a wort of which* $\frac{1}{4.6}$ *were drawn, yielding* 4·415 *gallons P.S. on* 24*th May* 1904.

   (*a*) *Examined on* 25*th May* 1904—

   Acid ... ... 2·32%

Therefore in the original wort of $26\frac{1}{2}$ gallons—

Acid ... ... 1·816°/₀

(*b*) The spent wash distilled and the distillate made up with water to original volume—

Acid ... ... 0·028°/₀

5. *Spirit distilled from wort : age seventh day. Distillate made up with water to the volume of wort—*

(*a*) Proof spirit ... ... 8·75°/₀
(*b*) Acid ... ... 0·012°/₀

6. *Wort ripe for distillation. Distilled and the distillate made up with water to the volume of wort—*

(*a*) Proof spirit ... ... 11°/₀
(*b*) Acid ... ... 0·024°/₀

7. *Wort similar to above. In the distillate—*

(*a*) Proof spirit ... ... 16 5°/₀
(*b*) Acid ... ... 0·024°/₀

8. *Spent wash from wort* $26\frac{1}{2}$ *gallons, of which* $5\frac{1}{2}$ *gallons had been drawn away containing* 3·87 *gallons P.S. Spent wash examined on 4th June* 1904—

(*a*) Acid ... ... 2·96°/₀
(*b*) Sugar (as dextrorse) ... ... 1·25°/₀
(*c*) Acid in wort, about ... ... 2·34°/₀

9. *Spent wash from wort which had yielded* 4 *gallons P.S. Examined two days after—*

(*a*) Acid ... ... 3·9°/₀
(*b*) Acid in the wort ... ... 3·1°/₀

10. *Spent wash from wort which had yielded* 3·7 *gallons P.S. Examined one day after—*

(*a*) Acid ... ... 4·81°/₀
(*b*) Acid in the wort ... ... 3·8°/₀

From these results it appears (1) that wort fit for distillation contains from $1\frac{3}{4}$ to 3-4°/₀ of acid (as acetic acid) ; (2) that the acid fermentation takes place more rapidly during the earlier stages of alcoholic fermentation ; (3) that the production of acid is rather slow after it has reached a certain limit ; (4) that only about 0·024°/₀ of the acid of the wort is drawn away with the spirit even when distillation has been carried on to collect the last portion of alcohol ; (5) and that spent wash, if distilled, would give only about 0·03 or 0·04°/₀ of acid to the distillate.

The third inference is of great importance to the distillers, who know from experience that yield of spirit is not perceptibly diminished if distillation of wort is put off for a few days.

Now, assuming that a ripe wort contains $1\frac{3}{4}$°/₀ of acid (acetic), and that the production of the acid could be prevented and the

sugar used up could be turned into alcohol, we see that this percentage of acid means a loss of about 0·78 gallons of Proof spirit. In this calculation, 1 lb. of acetic acid has been taken equivalent to 0·76 lb. of alcohol or 0·17 gallons of P.S. One per cent. of acetic acid in $26\frac{1}{2}$ gallons of wort would therefore roughly mean 2·65 lbs. of acid, or 0·5 gallons of P.S. This gives us an idea of the probable loss of alcohol in wort. Of course the formation of acid does not necessarily mean actual transformation of alcohol into acid. For convenience of estimation the total acid is regarded as acetic acid. We know that there are various kinds of acids formed, some of which are derived directly from rice, that is, its starch and sugar. We see, however, that if the loss as acid could be prevented, and the alcohol collected from spent wash, the average yield of alcohol per 82 lbs. of rice would be about 5 gallons of P.S.

IV. *Suggestions.*—The study of rice fermentation enables us to suggest a few possible improvements in the method which is followed rather blindly, and to guard against defective fermentation which is not an unusual occurrence.

(i) We have seen how damp air affects caking by vigorous growth of *Mucor* and of other undesirable organisms drawing from rice their food but giving no return. It appears that the diastase enzyme is formed in cakes when the vegetative growth of the fungus is retarded owing to insufficient moisture. In my experiments I found that vigorous growth did not yield satisfactory result. In plenty of an organic substance, such as rice, in presence of water, *Mucor* induces putrefactive changes. The object of caking being understood, the spores of *Mucor* are to be given just sufficient moisture to germinate in the rice which is then to dry up slowly in order that the hyphæ may more and more penetrate into the grains in search of moisture. An attempt should therefore be made in wet months to keep the air of caking sheds pretty dry by artificial heating.

(ii) So again rapid drying of cakes in dry months is undesirable. This may be checked (**1**) by sprinkling water on rice when it is first laid out to cake; and (2) by placing large tubs of water in caking sheds. Perhaps a wet and dry bulb thermometer, hung up in the sheds, will prove a useful adjunct.

(iii) Better outturn of spirit in cold months is due to several causes, the chief of which are low temperature retarding acid fermentation, and comparative absence of weevils. Practically nothing but thorough cleanliness of vats and sheds can prevent putrefaction. The vats should be more carefully washed and fumigated than they are done at present. The caking sheds cannot be kept closed, as absence of plenty of light prevents rapid maturing and carbonization of *Mucor* so essential in successful caking. To check putrefactive change of wort, a more effectual method will perhaps be the introduction of mashing as practised in Europe.

(iv) Thorough cleanliness is also a remedy against attack of weevils. The difficulty of getting rid of the pest is enhanced by

the fact that caking sheds are never free from rice. Perhaps the best remedy is to have two or three caking sheds at considerable distances from one another and to use them alternately.

(v) The proportion of water added is 20 gallons for every 82 lbs. of malted and unmalted rice, *i.e.*, about 2½ parts of water to one of rice. The researches of Dr. Charles Graham show how temperature, relative proportion of water to malt, of malted and unmalted grain, and time of mashing influence the composition of resulting wort. The results obtained by him may not be true when *Mucor* ferment is used, especially when there is possibility of symbiotic action between *Mucor* and Bacteria. Trials with a view to find the best proportion of water to rice can be made only at a distillery.

(vi) Spent wash is at present thrown away and sometimes left in tanks for use as food for cattle. If there is much dextrin (as when the yield of spirit has been low), the spent wash may be diluted with water and yeast or wort added to recover a fresh portion of alcohol for use, say, in making varnish. Or acetous fermentation may be set up for preparation of acetates such as of iron or copper.

(vii) The primitive form of fireplace in distilleries occasions much waste of fuel. The simple expedient of a grating will considerably prevent this waste, and the waste heat of one fireplace may be utilised to boil wort of an adjacent still producing richer spirit at less cost, or to redistill weak spirit to make it strong.

(viii) As *Bákhar* is the ferment used, it is necessary to ascertain its quality before use. Sometimes caking is defective on account of bad *Bákhar*. When such is the case the distillers throw a quantity of *Bákhar* into their fermenting vats. This introduces *Mucor* spores and remedies the evil to a certain extent, but the outturn of spirit is always below the normal, since bad malting cannot be cured in this way. From appearance experienced distillers judge of the quality of *Bákhar*, but sometimes they make mistakes which cannot be found out until too late. It is, therefore, desirable to test the fermenting quality of every fresh batch of *Bákhar* pills. For this bits of the *Bákhar* may be powdered and mixed with small quantities of boiled rice. From growth of the fungus the quality of the *Bákhar* may be easily judged. Or the powdered *Bákhar* may be kept moist with water for a day or two and then examined under a microscope. There will be enough *Mucor* spores and hyphæ seen from which the proportion of the ferment spores may be judged. For this a low power microscope will suffice.

While concluding this paper I have great pleasure in acknowledging my indebtedness to Mr. C. C. Mitra, Excise Deputy Collector, and to Mr. A. N. Sen, Superintendent of the Central Distillery, Cuttack, for kindly supplying me with materials used in fermenting rice, and with much valuable information.[1]

[1] Most of the experiments described in this paper were carried out in 1904. A few relating to *Mucor-Torulæ* were done last year.

20. *Silver Dioxide and Silver Peroxynitrate*—*By* E. R. Watson, B.A. (Cantab.), B.Sc. (Lond.), *Offg. Professor of Chemistry, Civil Engineering College, Sibpur.*

In 1814 Ritter (*Gehlens Neues Journ. 3*, p. 561, 1804) obtained a black crystalline substance at the anode during the electrolysis of an aqueous solution of silver nitrate, which he regarded as silver dioxide, Ag_2O_2. Further investigation of this product, however, showed that it certainly was not pure silver dioxide. It was found always to contain nitrogen. By some investigators it was regarded as silver dioxide which mechanically but persistently retained silver nitrate (*Wiedemanns Elektricität*, II, p. 509). However, the majority of chemists who examined this product came to the conclusion that it was a definite molecular compound of silver nitrate and some peroxide of silver, and yet the results obtained were singularly inconsistent, and each investigation resulted in the proposal of a new formula for this supposed molecular compound. By Fischer and by Gmelin and Mahla it was regarded as a molecular compound of silver dioxide and silver nitrate with water of crystallisation, but they disagreed as to the formula.

$4AgO.AgNO_3.H_2O$ (Fischer in *Journ Prakt. Chem.*, *33*, p. 237).

$10AgO.2AgNO_3.H_2O$ (Gmelin and Mahla in *Liebigs Ann. Chem.*, Leipzig *83*, 289).

Berthelot considered the substance as a molecular compound of silver nitrate and a peroxide Ag_2O_3, and assigned the formula $4Ag_2O_3.2AgNO_3.H_2O$ (Dammer, *Anorganische Chemie*, II. 2, 771).

Sûlc gave to the substance the empirical formula $Ag_7\ NO_{11}$, and regarded it as a curious molecular compound of silver nitrate, silver dioxide and oxygen $AgNO_3.3Ag_2O_2.O_2$ (*Zeitschr. Anorg. Chem. 12*, 89).

Mulder and Haringa (*Rec. Trav. Chim.*, Leiden. *15*. 1., p. 236) agreed with Sûlc as to the empirical formula Ag_7NO_{11} but preferred to regard the substance as a molecular compound of silver dioxide and silver pernitrate, the silver salt of a hypothetical acid, pernitric acid, and they wrote the formula as $AgNO_5.3Ag_2O_2$.

Tanatar also agreed (*Zeitschr. Anorg. Chem.*, 28, p. 331) that the formula $Ag_7\ NO_{11}$ expressed empirically the composition of the compound, but gave the constitutional formula $AgNO_3.2Ag_5O_4$.

An examination of these records left the mind in considerable doubt as to the nature of this electrolytic product. In the first place, even the empirical formulae proposed exhibit very considerable discrepancies, which suggested that probably the different investigators had not analysed the same substance and that this anodic product might be, not a simple substance, but a mixture and that the proportions of the various components of the mixture were altered by slight changes in the conditions under which the electrolysis was brought about.

It must be remembered that this electrolysis of silver nitrate

solution is the only method by which a polyvalent silver compound can be obtained in any quantity. Other methods have been described for the preparation of silver dioxide. Wöhler states that he obtained silver dioxide as a black crust on a silver anode during the electrolysis of dilute sulphuric acid (*Liebigs Ann. Chem.*, Leipzig, *146*, p. 263), but the method gives an exceedingly poor yield, and it is difficult to obtain sufficient even for analysis. Schiel has described the preparation of silver dioxide by the action of ozone on normal silver oxide, Ag_2O (*Liebigs Ann. Chem.*, *Leipzig*, *132*, p. 322); and Berthelot has given reasons for the supposition that an oxide, Ag_4O_5, is formed on the addition of alkali to a mixture of hydrogen peroxide and silver nitrate, but has never isolated the compound. But the descriptions of silver peroxide which are to be found in the text-books are all derived from the investigation of the product formed at the anode during the electrolysis of silver nitrate solution (Fischer, *loc. cit.*; Gmelin and Mahla, *loc. cit.*; Wallquist in *Journ. Prakt. Chem*, *31*, p. 179; Grotthus, in *Gilbert Ann. 61*, 1819, p. 60; Böttger *Zeitschrift für Chemie 1870*, 82 and *Berichte 1873*, 1396). The whole question of the valency exhibited by silver in its per-compounds appeared, therefore, subject to doubt. It appeared probable that the dioxide of silver, Ag_2O_2, had never been obtained, and a whole series of formulae, *viz.*, Ag_2O_3, Ag_3O_4, Ag_4O_5, $Ag_{10}O_9$, $Ag_{12}O_{11}$, $Ag_{10}O_{13}$ and $Ag_{14}O_{17}$ had equal claim to represent the valency of silver in its per-compounds.

Black powders are obtained at the anode during the electrolysis of aqueous solutions of other soluble silver salts, and these products seem, in many respects, similar to that obtained from silver nitrate. They have been investigated by Mulder and Tanatar, and, apparently, to these substances also, it is necessary to assign quite complicated formulae.

For the product of the electrolysis of aqueous silver sulphate solution Mulder (*Rec. Trav. Chim.*, Leiden, *18*, p. 91; *19*. p. 115) proposed the formula $2Ag_2SO_4.5Ag_2O_2.6O$ which must be considered as deriving from the oxide $Ag_{14}O_{17}$; the electrolysis of silver acetate solution gave a product to which he assigned the indefinite formula $x\,(Ag_2O_2).\ y\,(AgO.OC.CH_3)\ z\,O$.

Tanatar obtained from silver fluoride a substance to which he assigned the formula $4Ag_3O_4.3AgF$. deriving from the oxide $Ag_{30}O_{35}$. On washing with hot water this was decomposed and there remained a compound $2Ag_3O_4.AgF$.

From these considerations I was led to examine in the first place the composition of the product obtained during the electrolysis of aqueous solutions of silver nitrate in order to see whether the product may be regarded as a definite chemical compound, or as a mixture in which the proportion of the constituents varied with the conditions under which the electrolysis was effected. I was at first unable to obtain concordant results, but soon found that this was due to a defect in the method of handling the product. This will not stand washing with warm water or contact with filter-paper or drying in the steam-oven, but if it be washed

by decantation with cold water, and be dried at the ordinary temperature in a desiccator over soda-lime, then perfectly consistent results may be obtained. This was already observed by Sûlc (*loc. cit.*). I repeated the work of Sûlc, reproducing all the conditions as perfectly as possible, and was able to obtain a product in all respects similar to that described by him. I then varied the conditions of electrolysis, *viz.*, the current-concentration and density and also the solution-strength, and examined a number of products obtained under different conditions. I found that in all cases the product was the same and identical with the compound described by Sûlc and which has been termed by Tanatar 'silver peroxynitrate.' This disposed of the possibility that the product was a mixture and in conjunction with the uniform crystalline appearance of the substance satisfied me that there was produced a definite chemical compound of which the composition could be satisfactorily represented by the empirical formula Ag_7NO_{11}. The results of the earlier investigators Fischer, Mahla and Berthelot, and the divergence of their analytical results from those of Sûlc, Mulder and Tanatar must be explained by the supposition that their method of handling the product before analysis had caused its partial decomposition.

Silver peroxynitrate, when heated to a temperature of about 150°, suddenly evolves oxygen, and there is left about 91·5 per cent. of a black residue. Sûlc has investigated this reaction carefully and has shown that it may be satisfactorily represented by the equation—

$$2Ag_7NO_{11} = 2AgNO_3 + 6Ag_2O + 5O_2.$$

On the further application of heat, a certain amount of brown fumes are evolved and there is left pure white silver—

$$2AgNO_3 = 2Ag + 2NO_2 + O_2$$
$$6Ag_2O = 12Ag + 3O_2$$

This behaviour, when heated, is of importance when considering the structural formula to be assigned to the compound. It shows that in some way one atom of silver is differentiated from the other six. This is shown both in the formula suggested by Sûlc, *viz.*—

$$(a)\ AgNO_3.3Ag_2O_2,O_2$$

and in that ascribed to the compound by Mulder and Haringa, *viz.*—

$$(b)\ AgNO_6.3Ag_2O_2$$

To both of these formulæ, however, there seem considerable objections.

That of Sûlc rests also on the behaviour of the substance when treated with aqueous ammonia (*Z. Anorg. Chem.*, 24, 305), in which reagent it goes into solution with the evolution of nitrogen, but both the analytical data and the argument based thereon seem open to objection. He supposes that it is only the Ag_2O_2 part of

the molecule which reacts with the ammonia according to the equation—

$$3Ag_2O_2 + 2NH_3 = 3Ag_2O + 3H_2O + N_2.$$

In the first place this assumes a knowledge of the behaviour of silver dioxide with ammonia—a knowledge which Sûlc had not derived from experience as he had found himself unable to prepare this dioxide of silver; and in the second place it is difficult to imagine what would be, on this hypothesis, the composition of the compound or compounds which remain in solution in the ammonia. I have prepared the pure dioxide of silver and I find that it does *not* react with ammonia according to the equation—

$$3Ag_2O_2 + 2NH_3 = 3Ag_2O + 3H_2O + N_2.$$

I have not been able to confirm Sûlc's analytical figures for the reaction of the peroxynitrate with ammonia, and until the nature of the other products of the reaction has been examined, it appears hazardous to draw any conclusions from this reaction.

According to the formula (*b*) suggested by Mulder and Haringa, the substance must be regarded as a basic salt, either of $Ag_2O.\ 6Ag_2O_2$ and the hypothetical acid HNO_5 in which nitrogen is nonovalent, or of Ag_2O_2 and the hypothetical acid H_2NO_5 in which nitrogen is octovalent, neither of which appear *à priori* probable.

Other formulae which might be suggested to elucidate the constitution of this compound are—

$$(c)\ Ag_7(NO_3)O_8.$$

This is, to a certain extent, identical with that suggested by Sûlc.

$$(d)\ Ag_7(NO_4)O_7.$$

According to this formula the substance is regarded as a basic salt of the hypothetical acid HNO_4 in which nitrogen is heptavalent.

It is important to notice what valency must be assigned to silver according to these different views.

(*a*) $AgNO_3.3Ag_2O_2.O_2$; derives from the oxide $Ag_2O, 3Ag_2O_2, O_2$ or $Ag_{14}O_{17}$.

(*b*) $AgNO_5.3Ag_2O_2$, deriving from the oxide $Ag_2O, 6Ag_2O_2 = Ag_{14}O_{13}$ or from Ag_2O_2.

(*c*) Similar in this respect to (*a*) deriving from $Ag_{14}O_{17}$.

(*d*) Deriving from the oxide $Ag_{14}O_{15}$.

It must be regarded as an *à priori* objection that it is necessary to assume that the compound derives from such complicated oxides as $Ag_{14}O_{13}$ or $Ag_{14}O_{15}$ or $Ag_{14}O_{17}$. This *à priori* objection would not apply to the formula $7Ag_2O_2, N_2O_7 = Ag_{14}N_2O_{21}$, which is somewhat similar to the formula Ag_7NO_{11} hitherto assigned. However, an examination of the analytical results, both

of Sûlc and of my own work, leave no doubt that the substance must be represented as Ag_7NO_{11} and not by the more tempting formula $Ag_{14}N_2O_{21}$.

I have examined the behaviour of the electrolytic product when treated with water. Even at the ordinary temperature of the laboratory (27° to 32° C) a reaction slowly occurs with the evolution of oxygen. This reaction occurs more readily on boiling, and is complete in less than an hour. Oxygen is evolved, part of the silver goes into solution and there remains a black substance which I have examined carefully and which is *pure silver dioxide* Ag_2O_2 probably obtained pure for the first time. The course of the reaction is represented by the equation—

$$Ag_7NO_{11} = AgNO_3 + 3Ag_2O_2 + O_2.$$

The dioxide of silver.—The insoluble substance which remains after long boiling with water of the peroxynitrate is undoubtedly pure silver dioxide, Ag_2O_2. This is shown by—

(1) the percentage of silver which it contains;

(2) the fact that on heating, oxygen only is evolved and that in amount required by the dioxide, Ag_2O_2, and there remains behind pure silver;

(3) the fact that on treatment with warm dilute sulphuric acid, the substance dissolves with the evolution of the amount of oxygen required by the equation—

$$2Ag_2O_2 + 2H_2SO_4 = 2Ag_2SO_4 + 2H_2O + O_2.$$

It is a greyish-black powder of Sp. G. 7·44 approx. which may be heated to 100° C without change. At a higher temperature it evolves oxygen and leaves silver.

The behaviour of the dioxide with ammonia is most curious. It dissolves in this reagent with the evolution of nitrogen, but in amount required by the equation—

$$6Ag_2O_2 + 2NH_3 = N_2 + 3H_2O + 3Ag_4O_3$$

and not, as would have been expected, in accordance with the equation—

$$3Ag_2O_2 + 2NH_3 = N_2 + 3H_2O + 3Ag_2O.$$

It would be desirable to investigate the nature of the product which goes into solution in the ammonia.

Soluble silver per-salts.—Both the peroxynitrate and the dioxide of silver, also the peroxysulphate produced by the electrolysis of aqueous silver sulphate solution, dissolve in cold, strong nitric acid with the production of a most intense brown-colored solution, and in cold, strong sulphuric acid with an olive-green color. No doubt these colors are due to the formation of silver per-salts. There seems no doubt that the same salts are formed from the peroxynitrate as from the dioxide, as the colors and absorption spectra of the solutions obtained from the two substances are identical.

These colored salts gradually decompose at the ordinary temperature and more quickly on heating or on adding water, and there remain in solution just the ordinary colorless silver salts, *viz.*, silver nitrate from the nitric acid solution and silver sulphate from the sulphuric acid solution. Up to the present, attempts to isolate these per-salts have been uniformly unsuccessful. During the decomposition of these solutions a certain amount of gas evolution occurs. This gas is no doubt oxygen. There is not formed any hydrogen peroxide during the decomposition. An attempt was made to study the rate of decomposition of the nitric acid solution by measuring the depth of color of the solution from time to time. It appears that the rate of decomposition of the colored compound is proportional to the concentration of this substance in the solution. Expressed in symbols

$$\frac{dx}{dt} = kx,$$

where x = concentration of the colored compound in the *solution*

t = time
k = a constant

or

$$t = A \lg^e x + B$$

where A and B are constants.

These observations are not in agreement with the supposition that the colored compound has the simple formula $Ag(NO_3)_2$ which would naturally be first assigned to it. The formula $[Ag(NO_3)_2]_4$ or $Ag_4(NO_3)_4$ satisfies the requirement that the substance shall decompose according to a unimolecular reaction *viz.*—

$$Ag_4(NO_3)_4 + 2H_2O = 4AgNO_3 + 4HNO_3 + O_2.$$

This requirement is also satisfied by $Ag_2(NO_4)_2$ decomposing thus:—

$$Ag_2(NO_4)_2 = 2AgNO_3 + O_2.$$

The question of the constitution of the soluble colored compound is, however, still under investigation.

Experimental.

Preparation of Silver peroxynitrate by electrolysis of aqueous silver nitrate solution.—In Expt. I, the silver nitrate solution was contained in a platinum dish surrounded by ice and water. The dish served as the kathode, whilst the anode was a square piece of platinum foil. In Expts. II, III and IV when stronger currents were employed, the peroxynitrate at the anode and the silver at the kathode formed in needles which grew to a great length, and it was necessary to use a porous cell to separate the products of the two electrodes. The silver nitrate was contained in a small beaker

surrounded by ice and water, and the electrodes were rectangular pieces of platinum foil 4cm. × 2cm. the kathode being surrounded by a porous cell. In Expt. I, the current was continued for two hours. In Expts. II, III and IV only for half an hour. In all cases the anodic product easily separated from the platinum foil, and was washed with cold distilled water by decantation and dried at the ordinary temperature over soda-lime in a desiccator.

The various samples of silver peroxynitrate were all analysed in the same way. A weighed quantity was heated very gently in a small round flask until the first stormy gas evolution occurred The operation was performed in a flask because in a crucible it was difficult to avoid loss when the sudden gas-evolution occurred. The black residue was, after weighing, transferred as completely as possible to a porcelain crucible and gently heated until it turned completely white, *i.e.*, was reduced completely to metallic silver.

Sample I.—0,3133 gms. gave 0·2861, gms. residue after gentle ignition, and 0·2499 gms. silver.

Sample II.—0·4772 gms. gave 0·4368 gms. residue after gentle ignition, and 0·3801 gms. silver.

Sample III.—0·4365 gms. gave 0·3989 gms. residue after gentle ignition and 0·3472 gms. silver.

Sample IV.—(*a*) 0·4915 gms. gave 0·4507 gms. residue after gentle ignition, and 0·3931 gms. silver.

(*b*) 0·4364 gms. gave 0·4009 gms. residue after gentle ignition, and 0·3497 gms. silver.

Expt. No.	Percentage strength of $AgNO_3$ solution.	Current strength ampères.	Current density ampères per sq. cm.	Per cent. residue after gentle ignition.	Per cent. silver.
I	15	0·03	0·015	91·35	79.78
II	15	0·55	0·07	91.54	79 66
III	15	1·12	0·14	91.40	79.68
IV	5	0·55	0·07	(*a*) 91.70	79.98
				(*b*) 91.88	80.18
		Ag_7NO_{11} reqnires		91.56	79.91

These figures show clearly that the composition of the anodic product is independent of the concentration of the silver nitrate solution and of the strength and density of the current. The product was, in all cases, uniformly crystalline in octahedra: in I the crystals were separate or in small irregular aggregates. In II, III and IV, the octahedral crystals were regularly arranged into needle-like aggregates. It therefore appears that the product is not a mixture but a definite chemical compound.

Action of boiling water on silver peroxynitrate.—For this and subsequent experiments, the peroxynitrate was prepared as in Expt. III in the previous paragraph. With one cell, about 1·8 gms. could be prepared in one operation of 30 minutes. A weighed quantity of the substance was boiled with excess of distilled water in a beaker for 1½ hours, the water being replaced as required. The insoluble portion was filtered off, washed with hot distilled water, dissolved in hot dilute nitric acid, and the silver in this solution estimated by precipitating and weighing as silver chloride.

The silver in the filtrate was also estimated in the same way.

0·6557 gms. gave 0·5968 gms. silver chloride from the insoluble residue: insol. Ag = 68·50 per cent.

0·6842 gms. gave 0·6186 gms. silver chloride from the insoluble residue; and 0·1015 gms. silver chloride from the filtrate; insol. Ag = 68·05 per cent.; soluble Ag = 11·17 per cent.

Ag_7NO_{11} requires insol. Ag = 68·49; soluble Ag = 11·42 per cent.

In another experiment, the gas evolved during the reaction was collected and was recognised as pure oxygen from the fact that it was completely absorbed by alkaline pyrogallol solution. For collecting the gas the following apparatus was employed:—A flask of about 300 cc. capacity was fitted with a two-holed cork. In the one hole was fitted a delivery-tube with a stop-cock, and in the other a dropping-funnel with a short, wide delivering-tube. The flask was half-filled with distilled water, and boiled vigorously to dispel all air from the flask and water. The flame was then withdrawn from the flask and at the same time the stop-cock on the delivery tube was closed. A quantity of the peroxynitrate was then carefully introduced into the flask through the dropping-funnel, having been first carefully covered with water to prevent the introduction of air into the flask at the same time. The flask was then again heated, the stop-cock on the delivery-tube opened, and the oxygen, liberated from the reaction, was collected over water.

The dioxide of silver, Ag_2O_2.—The insoluble residue, which remains after prolonged boiling of the peroxynitrate with water, is pure silver dioxide, Ag_2O_2. It is washed by decantation with hot water and may be dried either at the ordinary temperature over soda-lime in a desiccator or in the steam-oven. It is a dull or greyish-black powder. Two determinations of the specific gravity, with about 2 gms. of the substance in a specific gravity bottle, gave 7·46 and 7·42 respectively. The value may therefore be taken as approximately 7·44. On heating, the substance quietly decomposes with the evolution of oxygen, and metallic silver remains, $Ag_2O_2 = 2Ag + O_2$.

The percentage of silver in the compound has been determined by heating a weighed quantity and weighing the residual silver.

Sample I.—0·7447 gms. gave 0·6475 gms. residual Ag: Ag = 86·94 per cent.

Sample II.—0·3612 gms. gave 0·3138 gms. residual Ag: Ag = 86·88 per cent.

The percentage of silver in the second sample was also determined by dissolving in warm dilute nitric acid, precipitating and weighing as silver chloride.

0·3663 gms. gave 0·4232 gms. Ag Cl: Ag = 86·94 per cent.

Ag_2O_2 requires Ag = 87·11 per cent.

The total oxygen in the compound has been determined by heating in a combustion tube in a current of carbon dioxide, and collecting the liberated gas over strong aqueous potash. This gas was recognised as oxygen from its complete absorption by alkaline pyrogallol solution.

0·0842 gms. gave 8·8 cc oxygen at 27° C and 757·5 mm. pressure; O = 13·07 per cent.

Ag_2O_2 requires O = 12·89 per cent.

The solution of silver dioxide in hot dilute sulphuric acid.—The dioxide dissolves readily with the liberation of oxygen in accordance with the equation—

$$2Ag_2O_2 + 2H_2SO_4 = 2Ag_2SO_4 + 2H_2O + O_2.$$

The estimation of the oxygen evolved was carried out in the apparatus previously used for examining the gas evolved on boiling the silver peroxynitrate with water. The flask was half-filled with dilute sulphuric acid and boiled until all air was expelled. The flame was then withdrawn from the flask, the stop-cock on the delivery-tube closed, and a weighed quantity of the dioxide introduced through the dropping-funnel. The flask was then again heated, the delivery-tube stop-cock reopened, and the oxygen collected over water. That this gas was oxygen was shown by its solution in alkaline pyrogallol solution.

0·2745 gms. gave 13·7 cc oxygen at 26° C and 757·5 mm. pressure; O = 6·30 per cent.

1 atom of oxygen in Ag_2O_2 = 6·45 per cent.

The solution of silver dioxide in aqueous ammonia solution.—The oxide dissolves with the formation of a colorless solution and the liberation of nitrogen. The nitrogen liberated in this reaction was estimated in an apparatus similar in principle to that described by Sûlc (*Zeitschr. Anorg. Chem.*, **24**, p. 305). The substance was placed in a flask fitted with delivery-tube and a dropping-funnel, with delivering-tube reaching to the bottom of the flask and ending in a capillary. The whole apparatus was completey filled with water and then strong aqueous ammonia was gradually introduced from the dropping-funnel. The nitrogen liberated was collected over water. At the end of the reaction, any gas remaining in the apparatus was driven out by water. The solution was effected at the ordinary temperature.

0·4158 gms. gave 7·3 cc nitrogen at 28° C and 762·5 mm. pressure; N = 1·92 per cent.

0·4255 gms. gave 7·4 cc nitrogen at 28° C and 762·5 mm. pressure; N = 1·91 per cent.

0·5770 gms. gave 10·1 cc nitrogen at 28° C and 762·5 mm. pressure; N = 1·92 per cent.

These figures indicate that only one quarter of the oxygen contained in the dioxide reacts with ammonia with the formation of water and nitrogen, according to the equation—

$$6Ag_2O_2 + 2NH_3 = 3Ag_4O_3 + 3H_2O + N_2.$$

and then the Ag_4O_3 reacts with a further quantity of ammonia without the liberation of any gas to produce a soluble compound, perhaps of the form m Ag_4O_3, n NH_3.

According to this equation, Ag_2O_2 would cause the evolution of 1·88 per cent. of nitrogen.

It is usually stated in the text-books that silver dioxide reacts with ammonia according to the equation—

$$3Ag_2O_2 + 2NH_3 = 3Ag_2O + 3H_2O + N_2.$$

This, apparently, is based on the investigation of silver peroxynitrate by Böttger (loc. cit.).

It would be desirable to investigate the soluble compound formed in this reaction, as it appears that in this compound also the silver must exhibit a valency greater than unity.

The solution of silver dioxide in strong nitric acid.—The dioxide dissolves in cold, strong nitric acid with the production of an intense brown-colored solution.

The absorption spectrum shows continuous absorption in all parts of the spectrum except in the red of smaller wavelength, the yellow and the green. The color of the solution is colder than that of iodine in alcohol or of ammonio-citrate of iron in water, and appears to be best matched by an oxidised solution of alkaline pyrogallol. 0·1 gm. of the oxide gave a very dark, almost opaque color to 10 cc of strong nitric acid. The substance could not be precipitated by either alcohol or ether, as both these substances immediately destroyed the color of the solution. With dilute nitric acid the color of the solution obtained was never very intense, showing that only a trace of the colored compound was formed under these conditions. The color of the solution gradually fades on standing even at the ordinary temperature (27°–30° C), and much more quickly on warming. The color disappeared at least 3,000 to 4,000 times more rapidly at 100° C than at the ordinary temperature. On the first addition of concentrated nitric acid to the peroxide, there is considerable gas evolution, and during the fading of the color of the solution there is a very slight evolution of gas. The fading of the color was accelerated when the free surface of the solution was increased. For this reason the attempt to isolate the substance by rapidly evaporating the solution over soda-lime in a vacuum at the ordinary temperature was unsuccessful.

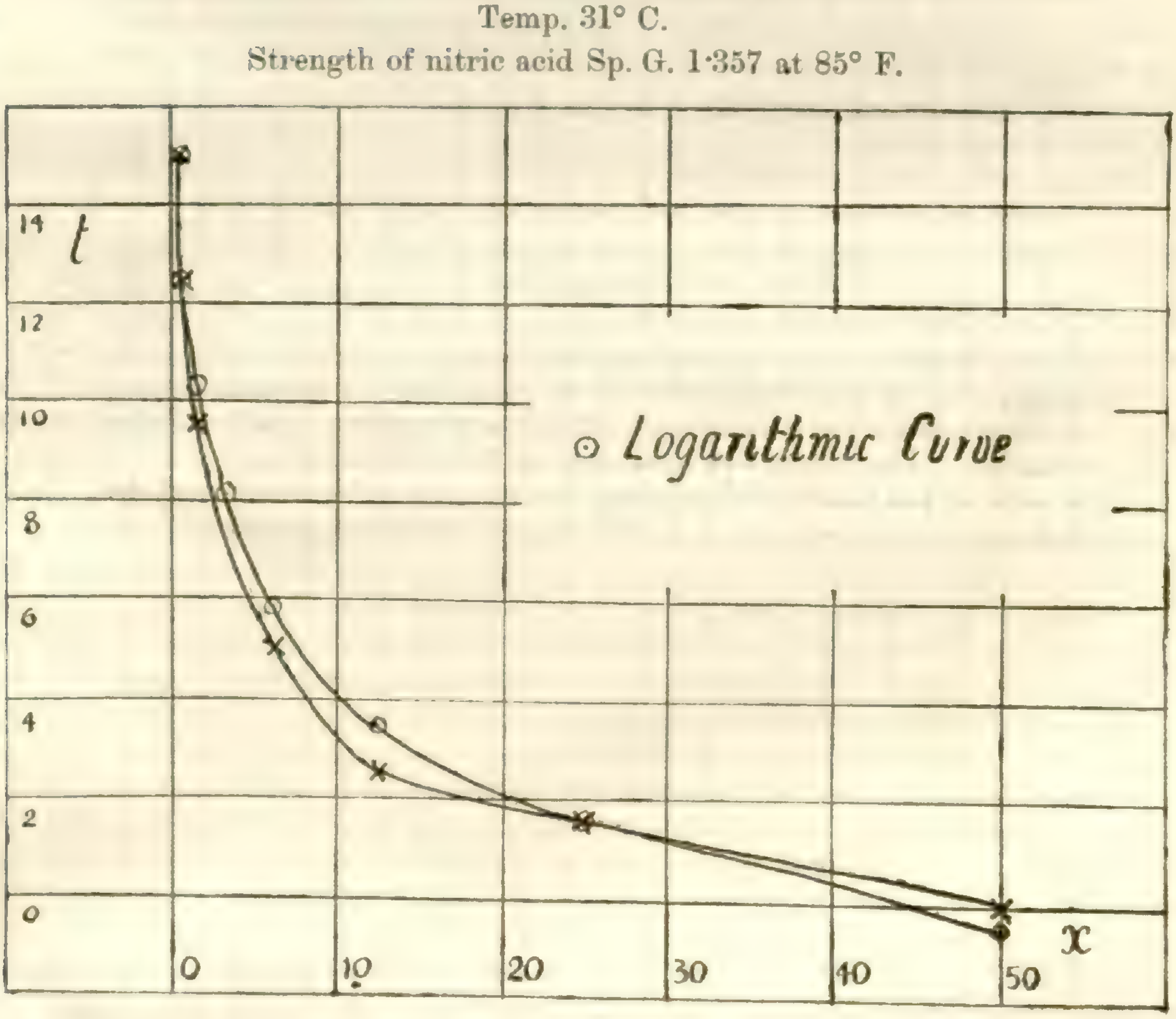
The rate at which the colored compound decomposed was studied by keeping a test-tube containing the solution surrounded by a beaker of water to keep the temperature steady, and noting

the time when the color appeared equal in intensity to that of one of a series of standard solutions of ammonio-citrate of iron contained in similar test-tubes. There was some difficulty in that the ammonio-citrate of iron solutions had a warmer brown color than that of the solution under investigation. One set of observations is given in the following table:—

Time (t) (mins.).	Concentration of ammonio-citrate of iron match (x) (gms. per litre).
0·0	50
1·5	25
2·5	12·5
5·0	6·25
8·0	3·12
9·5	1·56
12·5	0·78
15·0	0·39

Temp. 31° C.

Strength of nitric acid Sp. G. 1·357 at 85° F.



The curve (diagram) is plotted from this table, and for comparison there is also drawn the logarithmic curve

$$t = A \lg_e x + B.$$

A and B having been chosen so that the two curves shall be coincident at $t = 1{\cdot}5$ mins. and $t = 12{\cdot}5$ mins. respectively.

The agreement is fairly good. The curves

$$t = \frac{A}{x} + B.$$

$$t = \frac{A}{x^2} + B.$$

$$t = \frac{A}{x^3} + B.$$

all give much worse agreement.

This result is not in accordance with the simple supposition that the colored compound is $Ag(NO_3)_2$ but could be explained by the supposition that this salt has the formula $Ag_4(NO_3)_2$ and decomposes according to the equation—

$$Ag_4(NO_3)_2 + 2H_2O = 4AgNO_3 + 4HNO_3 + O_2.$$

The formula $Ag_2(NO_4)_2$ is also possible—

$$Ag_2(NO_4)_2 = 2AgNO_3 + O_2.$$

A similar brown-colored solution was also obtained by the addition of strong nitric acid to the peroxynitrate; also from the peroxysulphate obtained by the electrolysis of aqueous silver sulphate solution, and from the black crust obtained in small quantity by the electrolysis of dilute sulphuric acid solution with silver anode (Wöhler. *Liebig's Ann. Chem.*, *146*, 263). In cold, strong sulphuric acid, these substances dissolve to produce an olive-green solution. The absorption spectrum of this solution is very similar to that of the nitric acid solution, except that a little more of the red end of the spectrum is absorbed and less of the green.

21. *Note on the SIKANDAR NĀMA of NIẒĀMĪ.* By Lieut.-Col. D. C. Phillott, *Secretary to the Board of Examiners.*

In the story[1] of Alexander going on a secret embassy to *Naushāba* occur the lines :—

چو در طاس لغزنده[2] افتاد مور .·. رهانند-ده را چاره باید نه زور

It seems to have escaped translators that by the expression, "slippery cup" the author refers to the pit of the ant lion.[3] (One ant lion with three saliva glands of the sheep given daily to a falcon in a fold of meat, is supposed by Turkish falconers to be a remedy for slow moulting.)

I am indebted to Dr. Annandale, Deputy Superintendent of the Indian Museum, for the following note on the ant lion :—

"Ant lions are the young of a group of insects (Myrneleonides), "which somewhat resemble dragon flies in appearance but have con- "spicuous, clubbed antennae and relatively larger and more dia- "phanous wings. They are common in all sandy localities in the "East, and a considerable number of specimens of two kinds were "brought from *Sīstān* by the collector attached to the recent arbitra- "tion commission. The pitfall of the ant lion is made in the follow- "ing way : Moving backwards, as it always does, the insect digs a "circular furrow with its body. The sand thus excavated is placed "on the large flattened head by means of the legs and is jerked out "of the way. Other concentric furrows are then made in a similar "manner, within the first, until a conical depression has been formed "and the ant lion buries itself at the bottom, only its formidable "toothed mandibles remaining exposed. When an ant or other "insect strays over the edge of the pit the loose sand slips away un- "der its feet, and the ant lion further increases its difficulties by jerk- "ing loose sand at it, until it sinks and is devoured. After living "in this way for a certain period, the ant lion spins a cocoon of silk, "with which it incorporates grains of sand, and pupates at the bot- "tom of its pit, whence it issues in due course as a winged and sexu- "ally mature insect."

---

1 Line 3, page 75, Bombay litho. edition, dated A.H. 1265.
2 In some Indian editions the reading is رخشنده
3 Modern Persians call the ant lion *shīr-i mūr*.

PRINCIPAL PUBLICATIONS OF THE SOCIETY.

Asiatic Researches, Vols. I—XX and Index, 1788—1839.
Proceedings, 1865—1904, (now amalgamated with Journal).
Memoirs, Vol. 1, *etc.*, 1905, *etc.*
Journal, Vols. 1—73, 1832—1904.
Journal and Proceedings, [*N. S.*] Vol. 1, *etc.*, 1905, *etc.*
Centenary Review, 1784—1883.
Bibliotheca Indica, 1848, *etc.*

A complete list of publications sold by the Society can be obtained by application to the Honorary Secretary, 57, Park Street, Calcutta.

PRIVILEGES OF ORDINARY MEMBERS.

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(*f*) To receive *gratis*, copies of the *Journal and Proceedings* and *Memoirs* of the Society.

(*g*) To fill any office in the Society on being duly elected thereto.

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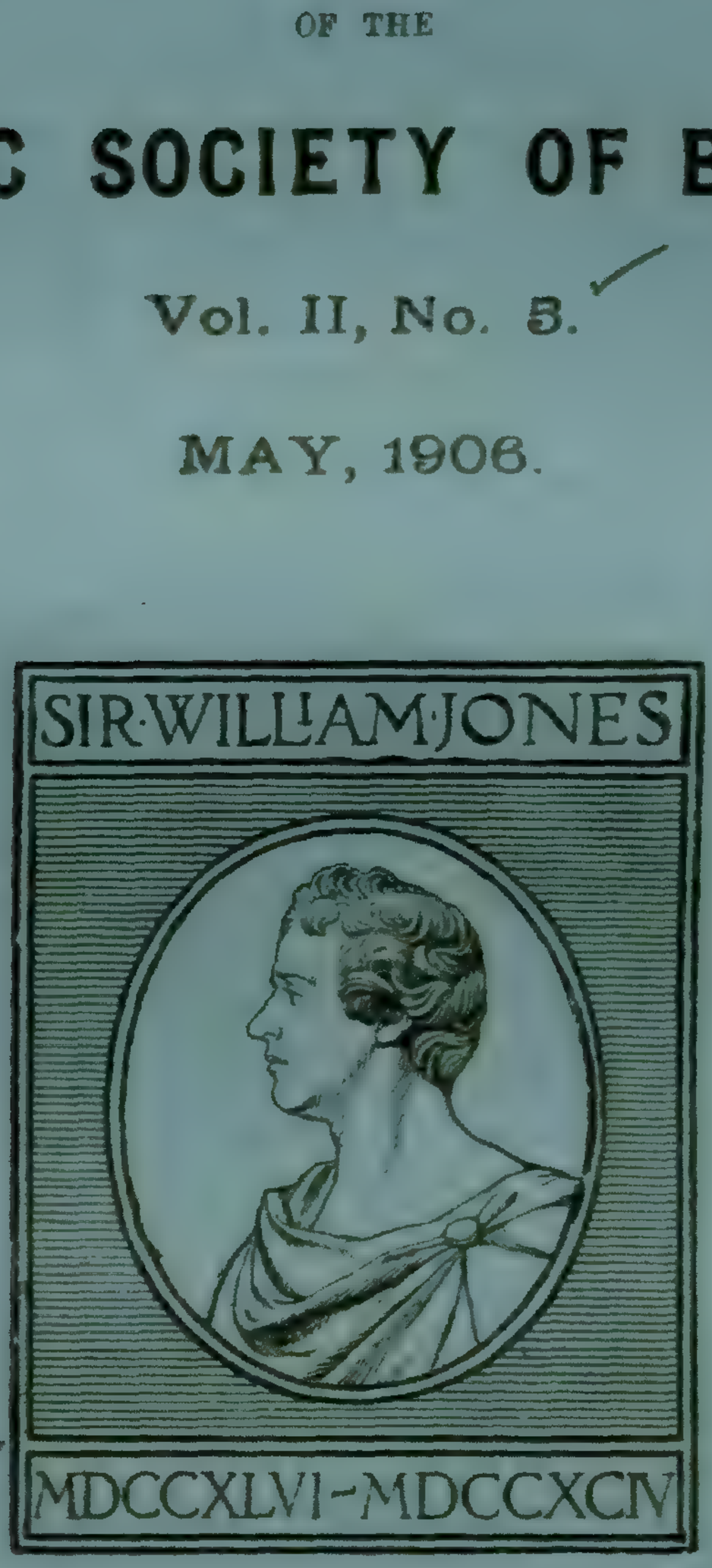
JOURNAL & PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

Vol. II, No. 5.

MAY, 1906.



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List of Officers and Members of Council

OF THE

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MAY, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 2nd May, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L.,

Notice.

Foreign Societies who favour the Asiatic Society of Bengal with their publications are informed that they may be sent either to the address of the Society at Calcutta, or to the Agents of the Society in London, Mr. Bernard Quaritch, 15 Piccadilly.

Avis.

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Anzeige.

Ausländische Gesellschaften welche die Asiatische Gesellschaft von Bengalen mit ihren Publicationen beehren, werden hierdurch ersucht dieselben entweder direkt an die Adresse der Gesellschaft, 57, Park Street, Calcutta, oder an den Agenten in London, Mr. Bernard Quaritch, 15 Piccadilly, zu senden.

which information had already been sent to resident members in accordance with Rule 64A, was brought up for discussion.

Mr. E. B. Howell, I.C.S., proposed by Mr. R. Burn, seconded by Lieut.-Col. D. C. Phillott; Raja Prabhat Chandra Baruah, proposed by the Hon. Mr. Justice Asutosh Mukhopadhyaya, seconded by Pandit Yogesa Chandra Sastree-Sankhyaratna-Veda-tirtha; Maulavi Sakhawat Husain, proposed by Shams-ul-Ulama Maulavi Mahammad Shibli Nomani, seconded by Nawab Ali Husain Khan; were ballotted for and elected Ordinary Members.

MAY, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 2nd May, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present :—

Dr. A. S. Allan, The Hon. Mr. C. G. H. Allen, Dr. N. Annandale, Mr. B. L. Chaudhuri, Babu Girindra Nath Dutt, Mr. L. L. Fermor, Dr. W. C. Hossack, Mr. T. H. D. La Touche, Dr. H. H. Mann, Major F. P. Maynard, I.M.S., Lieut.-Col. D. C. Phillott, Mr. G. E. Pilgrim, Rai Bahadur Ram Brahma Sanyal, Pandit Yogesa Chandra Sastree-Sankhyaratna-Vedatirtha, Dr. C. Schulten, Mr. R. R. Simpson, Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. E. H. Walsh.

Visitors :—Mr. W. Bussenius, Dr. J. N. Cook, Major F. C. Hughes, I.A., Captain R. E. Lloyd, I.M.S., Dr. F. Pearse, and others.

The minutes of the last meeting were read and confirmed.

Twenty-six presentations were announced.

The General Secretary reported the death of Mahamahopadhyaya Mahes Chandra Nyayaratna, an Ordinary Member of the Society.

The General Secretary read a letter from the Right Hon. Baron Curzon of Kedleston, expressing his thanks for being elected an Honorary Member of the Society.

The Chairman announced the following appointments :—

1. Mr. R. Burn, Numismatic Secretary during the absence of Mr. H. Nelson Wright.

2. Mahamahopadhyaya Haraprasad Shastri, temporarily appointed to officiate as Philological Secretary during the absence of Dr. E. D. Ross.

3. Mr. J. A. Chapman, Treasurer, vice The Hon. Mr. Justice Ashutosh Mukhopadhyaya, resigned.

The proposal to create a Medical Section in the Society, of which intimation had already been sent to resident members in accordance with Rule 64A, was brought up for discussion.

Mr. E. B. Howell, I.C.S., proposed by Mr. R. Burn, seconded by Lieut.-Col. D. C. Phillott ; Raja Prabhat Chandra Baruah, proposed by the Hon. Mr. Justice Asutosh Mukhopadhyaya, seconded by Pandit Yogesa Chandra Sastree-Sankhyaratna-Vedatirtha ; Maulavi Sakhawat Husain, proposed by Shams-ul-Ulama Maulavi Mahammad Shibli Nomani, seconded by Nawab Ali Husain Khan ; were ballotted for and elected Ordinary Members.

Capt. R. E. Lloyd exhibited specimens of *Bathynomus giganteus; Aulastomomorpha phosphorops* and a new species of the same genus; two new deep-sea Skates; a gigantic deep-sea Holothurian, and a large specimen of *Spongodes* with commensal Crustacea, all dredged by the R.I.M. Survey Ship, "Investigator."

The following papers were read:—

. *Some Persian Riddles collected from Derrishes in the South of Persia.—By* LIEUT-COL. D. C. PHILLOT, *Secretary to the Board of Examiners.*

This paper has been published in the *Journal and Proceedings* for April, 1906.

2. *The Proportion between Sexes in* HELOPELTIS THEIVORA, *Waterhouse.—By* H. H. MANN, D.SC.

3. *Preliminary note on the Rats of Calcutta.—By* W. C. HOSSACK, M.D.

4. *Notes on the Freshwater Fauna of India. No. V.—Some Animals found associated with* Spongilla carteri *in Calcutta.—By* N. ANNANDALE. *No. VI—The Life-History of an Aquatic Weevil.—By* N. ANNANDALE, *and* C. A. PAIVA. *No. VII.—A new Goby from Fresh and Brackish Water in Lower Bengal.—By* N. ANNANDALE.

5. *Elements of the Grammar of the Kanawar Language explained in English with English illustrations.—By* PANDIT TIKA RAM JOSHI. *Communicated by the Philological Secretary.*

This paper will be published as a special number of the *Journal and Proceedings.*

6. *The Coinage of Tibet.—By* E. H. WALSH, I.C.S.

This paper will be published in a subsequent issue of the *Journal and Proceedings.*

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ANNANDALE, N.—Notes on the Freshwater Fauna of India. No. V.—Some animals found associated with *Spongilla carteri* in Calcutta. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 187-196.

Chætogaster spongillæ, sp. nov., diagnosis of. N. Annandale, Calcutta, Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 188-190.

Chironomus sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 190-193.

Tanypus, sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 193-194.

Sisyra, sp. (larva), habits of. N. Annandale, Calcutta Journ. and Proc., As. S c. Beng., Vol. II, No. 5, 1906, pp. 194-196.

ANNANDALE, N., and PAIVA, C. A.—Notes on the Freshwater Fauna of India. No. VI.—The life-history of an Aquatic *Weevil*. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 197-200.

Aquatic Weevil, description and habit of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 197-200.

ANNANDALE, N.—Notes on the Freshwater Fauna of India, No. VII.—A new Goby from Fresh and Brackish water in Lower Bengal. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 201-202.

Gobius alcockii, sp. nov., diagnosis of. N. Annandale, Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, p. 201.

HOSSACK, W. C.—Preliminary Notes on the Rats of Calcutta. Calcutta Journ. and Proc., As. Soc. Beng., Vol. II, No. 5, 1906, pp. 183-186.

Key to Rats of Calcutta.

A. Long-tailed Rats.

(1) *Mus rattus alexandrinus.*

B. Short or Medium-tailed.

(2) *Mus decumanus.*

(3) *Nesokia bengalensis.*

(4) *Nesokia nemorivaga.*

Library.

The following new books have been added to the Library during April, 1906 :—

Co-operative Credit Societies, U.P. Annual Report on the working of the Co-operative Credit Societies Act—X of 1904—for the year 1904–05. *Allahabad*, 1905. Fcp.

Presd. by the Govt. of United Provinces.

Benares.—*Nagaripracharini Sabha.* Proceedings of a public meeting, held on the 29th December, 1905...to discuss the question of a common character for Indian vernaculars.
Benares, 1906. 8°.

Presd. by the Sabha.

Bombay.—*Plague Research Laboratory.* Report of the Plague Research Laboratory for the official year ending 31st March, 1905. By Lieut.-Col. W. B. Bannerman.
Bombay, 1906. Fcp.

Presd. by Lt.-Col. W. B. Bannerman.

Chaudhuri, B. L. Elie Metchnikoff and his studies on human nature. [*Calcutta*, 1905.] 8°.

Reprinted from the Calcutta Journal of Medicine, 1905.

Presd. by the Author.

Gait, E. A. A History of Assam. *Calcutta*, 1906. 8°.

Presd. by the Author.

Haeckel, Ernst. Last Words on Evolution. A popular retrospect and summary...Translated from the second edition by J. McCabe. With portrait and...plates.
London, 1906. 8°.

Presd. by the Author.

Jervis, *Major* T. B. Geographical and Statistical Memoir of the Konkun. The revenue and land tenures of the Western part of India, *etc.* *Calcutta*, 1840. 8°.

Reprinted from the Journal of the Bombay Geographical Society, 1840.

Jervis, W. P. Thomas Best Jervis...As Christian soldier, geographer and friend of India, 1796–1857. A centenary tribute, *etc.* *London*, 1898. 8°.

Jong, A. W. K. de. Het Alkaloidgehalte van Cocablad. [*Batavia*, 1906.] 8°.

Presd. by the Botanic Institute of Butenzorg.

Kodaikanal Observatory.—*Madras.* Bulletin. No. IV. [*Madras*, 1906.] 4°.

Presd. by the Govt. of Madras.

McGregor, Richard C., and **Worcester,** Dean C. A Hand-List of the birds of the Philippine Islands. *Manila*, 1906. 8°.

Publications of the Bureau of Govt. Laboratories, No. 36.

Presd. by the Bureau of Govt. Laboratories, Manila.

Young, Alfred H. Studies in Anatomy from the Anatomica Department of the University of Manchester. Vol. III. Edited by A. H. Young. *Manchester*, 1906. 8°.

Publications of the University of Manchester, Anatomical Series, No. I.

Presd. by the University of Manchester.

22. *Sanskrit Literature in Bengal during the Sena rule.*—*By* Monmohan Chakravarti, M.A., B.L., M.R.A.S.

The Augustan Period of Sanskrit in Bengal.

Under the last three Sena kings the study of Sanskrit in Bengal received a great impulse. The political and literary history of the period is little known and less understood. But some of the main causes may be dimly guessed at.

Causes.

1. The Age: A general Revival of Sanskrit in Hindustan.

During the eleventh and twelfth centuries a general revival of Sanskrit learning is noticeable in Hindustan. The courts of Kāśmīr, Kanauj, Cedi and Dhārā were influential centres of scholars and Brahminical schools. Mithilā and Kaliṅga courts were also not much behind them. Paṇḍits and their students travelled in numbers from one court to another, from one *ṭol* to the other. All this encouraged the study of Sanskrit in Bengal, where it had been not much attended to up to that time, presumably on account of Buddhistic influences.

2. The taste and the liberality of the later Sena kings.

Furthermore, the different parts of Bengal, such as Suhma, Vaṅga, Vārendra and Rāḍha were united under one rule by Vijayasena and his two successors. The union of so many fertile tracts added wealth and splendour to the Bengal courts and permitted liberal endowments and gifts on the part of their kings. The available references, though very scanty, sufficiently indicate the taste and the liberality of the later Sena kings. Ballālasena, Lakṣmaṇasena, Keśavaśena, and Mādhavasena (probably of the royal family) themselves composed verses and compiled other works with the help of court paṇḍits. Of Lakṣmaṇasena's liberality the *Ṭabakāt-i-Nāṣirī* recorded:—"The least gift he used to bestow was a lak of *kauṛīs*." (Raverty's translation, p. 556.) The poet Dhoyīka speaks of having received gifts of elephants and golden-handled fly-whiskers (the *Pavana-dūtam*, verse 101). The Sena kings called themselves *Parama-vaīṣṇava;* and, probably, it might have been a part of their policy to encourage Bráhmaṇas and Sanskrit studies in contradistinction to the Buddhistic tendency of their neighbours the Pāla kings.

In consequence a band of Sanskrit writers flourished in the latter part of the Sena rule. Many *ṭols* also seem to have been established in, and near Nūdiah, the capital. To these *ṭols* may be reasonably traced the origin of the well-known Navadvīp school, which has survived to this day and which produced in the 15th and 16th centuries a remarkable group of Naiyāyikas and Smṛti writers. In the Sena period, however, the authors confined themselves chiefly to rituals and poetry, the two subjects in which the kings took special interest.

I now add a few remarks on these writers, taking them alphabetically :—

(*I*) *ANIRUDDHA.*

Aniruddha, the Rāj-guru.

Guru of Ballālasena. The king compiled the *dānasāgara* at his instance. Said to have been famous in Vārendra land.[1] None of his works has yet been discovered. But that he composed works on rituals is inferrable from the statement of Gopāla Bhaṭṭa, the disciple of Caitanya. In the *Sat-kriyā-sāra-dīpaka*, a ritual work for Vaiṣṇavas, Gopāla Bhaṭṭa says that he compiled it after consulting the works of Aniruddha, Bhīma Bhaṭṭa, Govindānanda, Nārāyaṇa Bhaṭṭa, Bhavadeva and others.[2] Mittra's "Notices" mention two ritual works of one Mahāmahopādhyāya Aniruddha Bhaṭṭa, *viz.*, the *Çuddhi-viveka* (No. 299, II, 338) and the *Hāralatā* (No. 1001, II, 372). Aniruddha and the *Hāralatā* have been referred in the *Śuddhi-Kaumudī* of Govindānanda Kavikaṅkanācāryya of the second quarter of the 16th century (Bibl. Ed., pp. 132; 30, 31, 33, 52, 87).

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[1] वेदार्थस्मृतिसंग्रहादिपुरुषः श्लाघ्यो वरेन्द्रीतले
निस्तन्त्रोज्ज्वलवीचिनाग्रनयनः सारपूतं ब्रह्मणि । (?)
षट्कर्म्मा भवदार्य्यशीलनिलयः प्रख्यातसत्यव्रतो
बृचारेरिव गीष्पतिर्नरपतेरस्यानिरुद्धो गुरुः ॥ [६ ॥]

आध्यातसकलपुराणस्मृतिसारः श्रद्धया गुरोरस्मात् ।
कलिकल्मषोवदानं (?) दाननिबन्धं विधाकामपि ॥ [७ ॥]

The *Dānasāgara*, H. P. Śāstri's "Notices," second series, Vol. I., p. 170.

[2] श्रीमद्गोपालभट्टोऽयं साधुनामाज्ञया श्रमम् ।
भगवद्धर्म्मरक्षार्थं भक्तानां वैदिकी तु या॥ [३ ॥]
कृता याप्यनिरुद्धेन भीमभट्टेन या कृता ।
श्रीमद्गोविन्दानन्देन कर्म्मिणां पद्धतिः कृता ॥[४ ॥]
श्रीनारायणभट्टेन कर्म्मैठाणान्तु वैदिकी ।
भट्टश्रीभवदेवेन छन्दोगानान्तु या कृता ॥ [५ ॥]

The *Sat-kriyā-sāra-dīpikā*, "Notices," second series, I. 397.

(II) ĪSĀNA.

Īśāna, writer on rites.

Elder brother of Halāyudha. No MS. of his work has as yet come to light. But Halāyudha in his introduction to the *Brāhmaṇa-sarvvasva* says that Īśāna wrote a *Paddhati* or manual on rites relating to the āhṇikas of Brāhmaṇas.[1]

(III) UDAYANA.

Udayana, the poet-pupil of Govardhana.

Mentioned by Govardhan-ācārya in the *Āryā-sapta-śati*, as having revised that poem.[2] He calls Udayana and Balabhadra *śiṣya-sodarābhyām*, which may mean twin-pupils of his or pupils who are brothers. Is he identical with the Udayana who composed the *praśasti* of Meghesvara temple, Bhuvaneśvara, Orissa ?[3] The time of the inscription falls in the last decade of the twelfth century,[4] which is the probable time of Govardhana's pupil.

(IV) UMĀPATI OR UMĀPATIDHARA.

Umāpatidhara, the poet.

The only complete piece of his as yet known is the *praśasti* in the Deopara inscription of Vijayasena (Ep. Ind. I. 307-311). Stray verses of his are, however, quoted in the anthologies. No less than ninety-two stanzas have been quoted under Umāpati or Umāpatidhara in Śridharadāsa's *Sūkti-karṇāmṛta*,[5] twelve stanzas under Umāpatidhara in Jalhana's *Subhāṣita-muktāvalī*, and two under that name in the *Śārṅgadhara-paddhati*.[5]

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[1] भ्राता पद्धतिमग्रतः पशुपतिः श्राद्धादिकृत्ये यथा-
दीश्वानः कृतवान् द्विजाह्निकविधौ ज्येष्ठोऽपरः पद्धतिम् ।

The *Brāhmaṇa-sarvvasa*, Printed edition, Calcutta, first half of verse 24.

[2] उदयनवल्लभद्राभ्यां सप्तशती शिष्यसोदराभ्यां मे ।
द्यौरिव रविचन्द्राभ्यां प्रकाशिता निर्मलीकृत्य ॥ ७५५ ॥

[3]उदयनकविरत्नस्यादेशात् प्रशस्तिविभासिनीं
सुललितपदन्यासैः सद्भिर्विदग्धमनोहरां ।

J.A.S.B., LXVI, p. 23; Ep. Ind., VI., p. 202; first half of verse 33.

[4] For the time of the inscription see my article, J.A.S.B. LXXII, 1903, p. 20.

[5] As the anthologies will be frequently referred to, their names are abbreviated as follows :—

(*a*) Śrīdharadāsa's *Sūkti*-(in two places called *Sadukti*-) *karṇ-āmṛta*—*S.K.* The pagings are from the MS., Asiatic Society, Bengal (A). The *variæ lectiones* are from a MS. of the Sanskrit College Library (S), and one of the Serampore College Library (Sr.).

He has been identified with one Umāpati Upāḍhyāya, author of the *Pārijāta-haraṇa-nāṭaka* (R. L. Mitra, Notices of Sanskrit MSS., V., p. 205), but, I think, on insufficient grounds, as the latter flourished under a different king, Hindupati Hariharadeva, after the Yavana rule (Do., V., p. 206).

His time.

The anterior time of Umāpatidhara is fixed by his composition of Vijayasena *praśasti*. The posterior limit is fixed by his mention in the *S K.* (A.D. 1206), and by the mention of his name in the *Gita-govinda*, Sarga I, verse 4. He probably lived in the reign of Lakṣmaṇasena, as Śrīdharadāsa quotes a verse of his lauding his father Vaṭudāsa, the friend and chief officer of that king.[1] Roughly speaking, he flourished in the third quarter of the twelfth century.

His verses.

Of the verses quoted in the *S K.*,[2] I find four are taken from the Deopara *praśasti*, viz., verse 7 of the inscription (*S K.*, III. 49·4, fol. 139*a*), verse 23 (III. 17·5, fol. 126*a*), verse 24, (III. 5·5, fol. 120*b*), and verse 30 (III. 17·4, fol. 125*b*); while the familiar hymn to the god Gaṇeśa (*Devendra-mauli-mandāra*) is attributed to Umāpatidhara (I. 29·5, fol. 16*a*). The verse *chinte Brahma-śiro*, which in *Ś.P.* is ascribed to Dhoyi (No. 1161), is in *S.K.* referred to this poet probably more correctly (IV. 2·2, fol. 142*b*); on the other hand the verse *priyāyāḥ pratyuṣe*, which in the *S.M.* (fol. 73) is put under Umāpatidhara, is ascribed in the *S.K.* to Dhoyīka (II. 135·3, fol. 99*b*); and similarly *Karabha-rabhasā*, which in *S.V.* is credited to Bhallaṭa (No. 669) is put under Umāpatidhara in *S.M.* (fol. 42*a*). In the *S.M.* fol. 416, *Karabha-dayite* is credited to Umāpatidhara, while in *S.V.* and *Ś.P.*, two verses with the same initial words are fonnd (Nos.

(*b*) Jalhana's *Subhāṣita-muktāvali*—*S.M.* (Dr. R G. Bhaṇḍārkar, Report on the Search for Sanskrit MSS. in the Bombay Presidency, 1897, pp. I-LIV).

(*c*) Vallabhadāsa's *Subhāṣit-āvalī*—*S.V.* (Peterson's Edition, Bombay Sanskrit Series).

(*d*) *Śārṅgadhara-paddhati*—*Ś.P.* (Peterson's Edition, B. S. S.)

[1] अलमादिवराहेण वटदासं परं स्तुमः ।

जगदुद्धरता येन न वक्रीकृतमाननं ॥ उमापतिधरस्य ॥

V. 76·4, Sr. pp. 440-1 (omitted in A).

[2] The verses in the *S.K.* are given below :—

I. 6·4, I. 11·3-4, I. 12·4, I. 18·2, I. 22 1, I. 26·4, I. 29·5, I. 37 2, I. 43·5, I. 52·4, I. 55 3-4, I. 57·3, I 61·1, I. 67·2, I. 72 4, I 73 1, I 90 4; II. 8·5, II. 11·2, II. 12·2, II. 16·3-4. II. 20·1-2, II. 24·5, II. 35·5, II. 48·4, II. 63·5, II. 64·2, II. 81 4-5, II. 94·2. II. 102·1, II. 106·5, II. 107 2-3, II. 109·2, II. 116·2-3, II. 117·2, II. 125 4, II. 144·3-4, II. 148 1, II. 154·1; III. 1·4, III. 5·5, III. 17 3-5, III 20·4, III. 26·4, III 33 1, III. 40·4, III. 43·5, III. 49·3-4; IV. 2·2, IV. 3·4, IV. 4·2, IV. 6·5, IV. 20·4, IV. 21·4, IV. 25·5, IV. 27·5, IV. 30·5, IV. 41·5. IV. 46·5, IV. 48·2, IV. 52·3-5, IV. 54·4, IV. 55·4, IV. 58·4, IV. 59·3-4, IV 68 3, IV 70·3, IV. 72·2; V. 13·3, V. 16·1, V. 18·3-4, V. 29·1, V. 61·3, V. 70·3, V. 73·3, V. 76·4.

666 and 667 of *S.V.*, and 960 and 953 of *Ṡ.P.*, 960 being claimed as *Bhagavata Vyāsasya*). One verse, *tenākhāni*, is found under Umāpatidhara both in *S.K.* (V. 13·3) and in the *S.M.* (fol. 1846). *Ṡ P.* quotes two more verses under this poet (Nos. 753, 3490).

Thus, excluding the Deopara *praśasti*, we get one hundred more verses of Umāpatidhara. All of them are not of equal merit. Two criticisms are, however, available, one by the poet himself, and one by Jayadeva. In the Deopara *praśasti*, verse 35, Umāpatidhara calls himself as "the poet whose understanding has been purified by the study of words and their meanings." In the *Gīta-govinda*, it is remarked :—*Vācaḥ pallavayaty=Umāpatidharaḥ* or Umāpatidhara sprouts words (*i e*, lengthens verses by addition of adjectives, &c.). Four verses of his cited below supply some historical facts. The first three refer to some unknown king (probably some Sena king) in connection with *Prāgjyotiṣ-endra*, with *Kāśi-janapadāḥ*, and with *Mlecchа-nareṇdra*; the fourth mentions liberal gifts to a poet for a work named *Candracūḍa-carita* by a king Cāṇakya-candra.

(1) गन्धेभस्कन्धकण्डूमदगुरुमरुद्धं दृहि ?)स्खोलल्लौहित्यखिल-
द्दौची(चि)वाचालकालाचलविपुलशिलाकेलितल्पे निषण्णाः ।
कामिन्यः सैनिकानां विधुतविधुरता भीतयो गीतवन्धै-
र्यस्य प्राग्ज्योतिषेन्द्रप्रयाणपरिगतं पौरुषं प्रस्तुवन्ति ॥

III. 20·4, fol. 127*a*.

(2) नखाङ्कं नारीणामनिलधुलितं केतकदलं
कलामिन्दोः पत्रं परिणतिविशीर्णं जलरुहां ।
गिरीच्यन्ते यस्य द्रुतमिलितनौकाटकघटा-
हठाक्षिप्तभ्रष्टाश्चकितमिव काञ्चीजनपदाः ॥

III. 26·4, fol. 129*b*.

(3) साधु स्लेच्छनरेन्द्र साधु भवतो मातैव वीरप्रसू-
र्नौचेनापि भवद्विधेन वसुधा सच्छत्रिया वर्त्तते ।
देवे कुप्यति यस्य वैरिपरिषन्मारङ्गमन्वेपुरः (?)
शस्त्रं शस्त्रमिति स्फुरन्ति रसना पत्त्यन्तराले गिरः ॥

V. 18·3, fol 178*a*.

(4) निष्पन्ने सति चन्द्रचूड़चरिते तत्तन्नृपप्रक्रिया-
जातैः सार्द्धमरातिराजकणिशो रत्नाङ्कजीनां व्ययं ।

[a] तन्नं-Sr. [b]सप्तस्वर्णशतानि विंशतिशती रूप्यस्य लक्षत्रयं
ग्रामाणां शतमन्तरङ्गकवये चाणक्यचन्द्रो ददौ ॥
V. 29·1, fol. 182*b*.

(*V*) *KEŚAVA* OR *KEŚAVASENA*.

Keśavasena, the Royal poet.

In the *S.K.* six verses appear under Śrīmat-Keśavasenadeva and one under Keśava.[1] They are apparently one and the same man. Keśavasenadeva probably belongs to the Sena royal family, and one verse of his (I. 54. 5) agrees in a general way with a verse of Lakṣmaṇasenadeva and of Jayadeva (*s.v.* Jayadeva). Another verse of his is quoted here :—

कैलासो निङ्कुतम्भीः परि[1]मिलितवपुः पार्व्वणः श्वेतभानुः
श्वेषः प्रच्छन्नवेश्मः कलयति न रुचिं जाह्नवीवारिवेणिः।
पीतः क्षीराम्बुराशिः प्रसभमपहृतः कुञ्जरो देव भर्त्तु-
र्यत् कीर्त्तीनां विवर्त्ते रजनि स भगवानेकदन्तोऽप्यदन्तः ॥
III. 52·3, fol. 140*b*.

1. •पिच्छिल–A. & S.

(*VI*) *ĀCARYA GOVARDHANA*.

Govardhana, the Ācārya poet.

Author of the *Āryā-sapta-śatī*. In the *S.V.* (fol. 127*b*) and the *S.P.* (No. 466), its verse 66 (*anya-mukhe durvādo*), is quoted under Govardhana. In the *S.K.* six new verses,[2] and in the *S.P.* one new verse (No. 3400) are quoted under this name.

His Āryā-sapta-śatī.

The *Āryā-sapta-śatī* consists of 54 introductory stanzas, 696 stanzas in the main body arranged alphabetically *a* to *kṣa*, and six concluding stanzas—in all 755, all in the *Āryā* metre. It was composed evidently in imitation of Hāla's *Gāthā-sapta-śatī* in Prākṛta and like its model is thoroughly amatory. The stanzas justify the remark in the *Gīta-govinda* that the elegant works of Ācārya Govardhana were distinguished by the erotic sentiment (*Śṛngār-ottara-satprameya-rachanair = Ācārya-Govardhana*, sarga I, verse 4).

The posterior limit of the poet's time is approximately fixed by the above reference in the *Gīta-govinda*, and the anterior limit by the verse 39 of the poem, in which he acknowledged a king of

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[1] *S.K.*—I. 54·5, I. 65·2, I. 72·5; III. 49·1, III. 52·3-4; under Keśava, I. 39·3.

[2] Verses in *S.K.*—II. 8·4, II. 80·5, II. 103·1, II. 142·5, II. 145·5; V. 12·4.

the Sena family as his patron.[1] Tradition names Lakṣmaṇasena as the king in whose court he flourished. His time may be thus approximately put in the fourth quarter of the 12th century. The poem was revised by his pupils Udayana and Balabhadra (*s.v.*). Five commentaries on it are as yet known, *viz.* (1) Ananta Paṇḍit's *Vyaṅgārtha-dīpana*, (2) Gokulacandra's *Rasika-candrikā* and the *ṭīkās* of Gaṅgārāma, Nārāyaṇa, and Viśveśvara (*vide* Aufrecht's *catalogus catalogorum.*)

His other verses.

Of the six verses in the *S.K.* not to be found in the *Āryā-sapta-śatī*, one is given here as sample :—

हारो यत्र व्यवधि रचना त्वन्तु येनापराधो
रोमोद्भेदोऽप्यश्थिथिलतरालिङ्गनेष्वन्तरायः ।
यस्मिन् वाञ्छा विरमति मिथो नार्द्धनारीश्वरत्वे
तद्दाम्पत्यं विभजतु कथंकारमन्यान्मृगाक्षी ॥

II. 80·5, fol. 78*a*.

CIRANTANA-SARAṆA.

One verse is quoted in the *S.K.* under this name. He is probably to be identified with Śaraṇa (*s.v.*).

(*VII*) *JAYADEVA.*

Jayadeva, the lyrical poet.

Author of the *Gitagovinda*. Little is known about him, and that little mostly traditional and conflicting.

First tradition—of Tirhoot.

One tradition puts him in Tirhut. About it Colebrooke wrote :—

"Jayadeva is by the *Maithilas* said to "be their countryman. In Tirhoot, a town "on the Belan river near Jenjhārpur, bears the name of *Kendoli*, "supposed to be the same as Kendūli.....kilva *sic* vilva is a family "of Maithili Brahmanas."

Beyond the similarity in the name, nothing else has been found to support it. The tradition may have originated by confounding the *Gīta-govinda-kāra* with a later vernacular poet, Jaideb. The latter flourished in Mithilā, by about 1400 A D. (J.A.S.B. 1888, p. 12); and Dr. Grierson extracted one Hindi song of his in the J.A.S.B. 1884, p. 88.

Second tradition —of Orissa

A second tradition claims him as of Orissa (see Candradatta's Sanskrit *Bhaktamālā*, sargas 39 to 41). According to it, Jayadeva was born in the village Binduvilva near Jagannāthapurī

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[1] सकलकलाः कल्पयितुं प्रभुः प्रबन्धस्य कुमुदबन्धोश्च ।
सेनकुलतिलकभूपतिरेको राकाप्रदोषश्च ॥ ३९ ॥

in Utkala, that he married Padmāvatī, that he composed the *Gītagovinda* with the line *smara-garala-khaṇḍanam* written by Lord Kṛṣna in the guise of the poet (chapter 39)[1]; that the king of Orissa compossed another *Gītagovinda* which Lord Jagannātha rejected in favour of Jaydeva's with some miracles indicating the Lord's favours to him and his wife (ch. 40); that Jayadeva was once robbed and had his hands and feet lopped off but that the limbs were miraculously restored; that in his old age he wished to have a bath in the Ganges, and the river goddess appeared before him in her watery form (ch. 41).

Objections.

This tradition is not old and seems to have jumbled together facts of different periods. The Sanskrit *Bhaktamālā* was evidently based on the Hindi *Bhaktamāl* of Nābhādāsa, as edited and rewritten by Nārāyaṇadāsa in the reign of Shahjehán, A.D. 1628-1658 (Grierson, Mod. Ver. Lit. Hind., J.A.S.B. 1888, p. 27). The tradition cannot thus be traced back beyond the seventeenth century, and requires strong corroboration before it can be accepted as a narration of events taking place in the twelfth century. On the other hand it appears to confound the *Gītagovinda-kāra* with a Jayadeva who flourished in the court of an Utkala king (vide *Alaṅkāra-śekhara*[2]), and to tag to it the fact of an *Abhinava-Gītagovinda*, which was composed by an Utkala king Puruṣottamadeva Gajapati, A.D. 1470-1497 (H. P. Śāstri's Report, 1895-1900, p. 17).

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[1] जगन्नाथपुरीप्रान्ते देशे चैवोत्कलाभिधे।
विन्दुविल्वइतिख्यातो ग्रामो ब्राह्मणसंकुलः ॥ २ ॥
तत्रोत्कले द्विजो जातो जयदेव इति श्रुतः।
विद्याभ्यासरतः शान्तः पुरुषोत्तमपूजकः ॥ ३ ॥
... ...
एकदा जयदेवस्तु मनस्येवमचिन्तयत्।
स्वयं कृतेन गीतेन तोषयिष्यामहं ॥ ३७ ॥
इति निश्चित्य निर्माय गीतगोविन्दनामकं।
गायंस्तु देवदेवाग्रे पत्न्या सह ननर्त्त ह ॥ ३८ ॥
इति श्रीभगवद्भक्तिमाहात्म्ये जयदेवचरितं नामैकोनचत्वारिंशः सर्गः ॥

[2] प्राक्प्रत्यक्पृथिवीभृतोः परिषदि प्रख्यातसंख्यावता-
मह्नायार्भूततर्ककर्कशतया विच्छिद्य विद्यामदम्।
ये केऽप्युत्कलभूपते तव सभासंभाविताः पण्डिताः
पत्रं श्रीजयदेवपण्डितकविस्तन्मूर्द्ध्नि विन्यस्यति ॥ ५ ॥

Third tradition—of Bengal.

A third tradition refers him to Bengal, describes him in a verse[1] as a Paṇḍit in the court of Lakṣmaṇasena, and locates his home in the village Kenduli, District Birbhum.

The most reliable.

This tradition appears to be the most reliable of the three. It is accepted in all the existing commentaries on the *Gītagovinda*. In the oldest known commentary, the *Rasika-priyā* of Kumbhakarṇa, under verse 4, sarga I, it is noted:—*Iti ṣaṭ-paṇḍitā-stasya rājño-Lakṣmṇasenasya prasiddhā iti ruḍhiḥ.* Of the king Kumbhakarṇa of Medapāṭ (Mewāḍ) various inscriptions have been found ranging from A.D. 1438 to 1459. So the tradition was current at least in the first half of the fifteenth century. The verse 4 itself gives Jayadeva's name with Umāpatidhara, Śaraṇa, Govardhana and Dhoyī,[2] all of whom are Bengal poets probably contemporaries of the king Lakṣmaṇasena; and this juxtaposition is best explainable on the supposition of Jayadeva too being a Bengal contemporary. Furthermore, the stanza 1, sarga I of the *Gitagovinda*, is found echoed in versification and meaning in a verse of Lakṣmaṇasena and one of Keśavasena[3]; and this similarity distinctly indicates a connexion of the poet with the Sena royal family.

The *Alaṅkāra-Śekhara* of Keśava Miśra, Nir. Sāg. Pr, p. 17.
This work is not older than the 16th century A.D. The author lived in the court of Māṅikyachandra, and a king bearing that name began to rule in Kangra in A.D. 1563 (A.S.R, V. 160).

[1] गोवर्धनश्च शरणो जयदेव उमापतिः।
कविराजश्च रत्नानि समितौ लक्ष्मणस्य च।
Said to have been inscribed over the door of the king's sabhā-hall.

[2] वाचः पल्लवयत्युमापतिधरः संदर्भशुद्धिं गिरां
जानीते जयदेव एव शरणः श्लाघ्यो दुरूह[a]द्रुतेः।
शृङ्गारोत्तरसत्प्रमेय[b]रचनैराचार्य्यगोवर्धन[c]
स्पर्द्धीकोऽपि न विश्रुतः श्रुतिधरो धोयी कविक्ष्मापतिः॥ ४॥

[a] ०द्रवे—*v.l.* [b] वचने०—*v.l.* [c] ०नः—*v.l.*

[3] मेघैर्मेदुरमम्बरं वनभुवः श्यामास्तमालद्रुमै-
र्नक्तं भीरुरयं त्वमेव तदिमं राधे गृहं प्रापय।
इत्थं नन्दनिदेशतश्चलितयोः प्रत्यध्वकुञ्जद्रुमं
राधामाधवयोर्जयन्ति यमुनाकुले रहः केलयः॥ १॥
गीतगोविन्द, सर्गः १

Jayadeva's Family, Parents.

Some of the MSS. have a verse towards the end (the last but two of the twelfth sarga), in which Jayadeva'a father is named Bhojadeva, mother Rāmā (variants Bāmā, Rādhā), and his friends Parāśara and others.[1] This passage is doubtful, as it is not found in many of the older texts and in older commentaries like the *Rasika-priyā*. In two MSS. of the Indian Government Collection, Calcutta, copied in Śaka 1697 and 1698 (Nos. 3867 and 3868 respectively) the line is omitted in the texts but commented on in the *ṭīkās;* at the same time it exists in the oldest MS. known, the Nepal MS. dated A.D. 1494.

Wife.

The traditions name Jayadeva's wife as Padmāvatī; and the verse 2, sarga I, and verse 8, sarga X, seem to support this view.[2] But a different reading

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दृष्ट्वात्वदनमालया सहकृतं केनापि कुञ्जान्तरे
गोपीकुन्तलवद्द(?)दाम तदिदं प्राप्तं मया गृह्यतां ।
इत्थं दुग्धमुखेन गोपशिशुना ख्याते चपानन्मयो
राधामाधवयोर्जयन्ति वलितस्मेरालसादृष्टयः ॥

श्रीमल्लक्ष्मण[a]सेनस्य ॥

S.K., I. 55·2, fol. 27*b*.

[a] •सेनदत्तस्य—Sr.

आकूतादद्य मयोत्सवे निशिगृहं शून्यं विमुच्यागता
चौरः प्रेष्यजनः कथं कुलवधूरेकाकिनी यास्यति ।
वत्स त्वं तदिमां नयालयमिति श्रुत्वा यशोदागिरो
राधामाधवयोर्जयन्ति मधुरस्मेरालसादृष्टयः ॥

केशवसेनदेवस्य ॥

S.K., I. 54·5, fol. 27*b*.

[1] श्रीभोजदेव[a] प्रभवस्य [b]रामादेवीसुत श्रीजय[c]देवकस्य ।
पराशरादिप्रिय[d]वर्गकण्ठे श्रीगीतगोविन्दकवित्वमस्तु ॥ ११ ॥

[a] •प्रवरस्य. प्रभवस्य. [b] वामा, राधा. [c] •देवस्य. [d] बन्धु•.

[2] वाग्देवताचरितचित्रितचित्तसद्मा
पद्मावतीचरणचारणचक्रवर्त्ती । First half, I. 2.
जयति, [a]जयदेवकविभारतीभूषितं
मानिनीजनजनितश्रा[b]तम् । Second half, X. 8.

[a] पद्मावतीरमणजयदेव-कविभारती भणितमतिश्रुतम् : पद्मावतीरमण कविभारती मानिनी•। [b] गीतं.

of X. 8 omits *Padmāvatī-ramaṇa ;* and the latter reading, while supported by old *ṭīkās* like the *Rasika-priyā*, is preferable according to versification rules. As regards I. 2, the same commentary refers to the tradition and rejects it (*Padmāvatī tasya kalatram-eke vadanti yat-tan-na vicāra-cāru*).

Home.

According to the commentators, Jayadeva's home is indicated in the second line of III. 10.[1] The name is variously read as *Tinduvilva* (*vide* the *Rasika-priyā*) *Kinduvilva*, *Kinduvilla*, *Kendubilla*, *Kendubilva*, *Sindubilva*. It is identified with Kenduli, District Birbhum, Bengal, on the north bank of the river Ajaya. An annual fair is held there on the last day of Māgha in Jayadeva's memory.

The time of the Gītagovinda.

In the *S.K.*, two verses of the *Gītagovinda* are quoted under Jayadeva, *viz.*, XI. 11, *Jaya-śrī-vinyastair°* (I. 59·4, fol. 29*b*) and VI. 11, *Aṅgeṣv-ābharaṇam* (II. 37·4, fol. 60*b*). The poem must therefore have been composed before A.D. 1206. By the mention of Dhoyī and other poets in I. 4, it could not likely have been written earlier than the rule of Lakṣmaṇasena. Its time therefore approximately falls in the fourth quarter of the twelfth century. Its verses are quoted (under Jayadeva) four times in the *S.V.*, and 21 times in the *S.P.*[2] The verse I (3) 11, *Unmīlan-madhu-gandha°* is quoted (without the author's name) in the rhetorical work *sāhitya-darpaṇa*, as an example of the alliteration *vṛtt-ānuprāsa* (X. 4).[3]

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[1] वर्णितं जयदेवकेन हरेरिदं [a]प्रबन्धेन ।
[b]तिन्दुविल्वसमुद्रसंभवरोहिणीरमणेन ॥ १० ॥

[a] प्रणतेन. [b] किन्दुबिल्व, &c.

[2] *S.V.*—Nos. 1313-4, 1357, 1613; *S.P.*—Nos. 80, 3380, 3431, 3460-1, 3481-2, 3498-3500, 3502, 3548-3550, 3609, 3617, 3658, 3681, 3686-7, 3820.

[3] In the Appendix to my article on "The Eastern Gaṅga Kings of Orissa" (J.A.S.B. LXXII, 1903, p. 146) I came to the conclusion that the *Sāhitya-darpaṇa* was an Oṛiyā work, and that its author Viśvanātha flourished probably not later than the beginning of the 14th century. Since then I have seen certain extracts from the same author's *Kāvyaprakāśa-darpaṇa* in the late V. R. Jhalkikāra's edition of the *Kāvyaprakāśa* (Bom. Sans. Ser., introd. pp. 30-1). They confirm my conclusions; *e.g.*, this *ṭikā* says under 5th ullāsa—*vaiparityaṁ rucim-kurv-iti pāṭhaḥ, atra ciṅku-padaṁ Kāśmīr-ādi-bhāṣāyāṁ-aślila-ārtha-bodhakaṁ Utkal-ādi-bhāṣāyāṁ 'dhṛta-bāṇḍakadrava' ity-ādi.* The reference to a colloquial Oṛiyā word (still in use) shows him to be an Oṛiyā. Furthermore he mentions therein his *Sāhitya-darpaṇa* (2nd and 10th ullāsas), *Candrakalā-nāṭikā* (8th ullāsa) and a new work *mama Narasiṁha-vijaye* (5th ullāsa). The name of the last work indicates that he flourished under the king Narasiṁha. As his father, Candraśekhara, composed a verse in honour of Bhānudeva, this Narsiṁha cannot be earlier than Narasiṁha II., and cannot be much later as Viśvanātha's grandfather's younger brother, Caṇḍīdāsa, wrote his *Kāvyaprakāśa-dīpikā* (quoted in *K.-darpaṇa*) probably in the 13th century. Narasiṁhadeva II. ruled Orissa between A.D. 1278-9—1305-6 (J.A.S.B. LXXII., 1903, p. 29*ff*).

Time of the Sāhitya-darpaṇa.

No other work of this Jayadeva has yet been found. In some of the *Gītagovinda* MSS. eight stanzas are added at the end under the heading *Gaṅgā-stava-prabandhaḥ* whose last line runs: *bhaṇantam=iha sādaraṁ dhīra-Jayadeva-kavi.*° In the *S.K.* a verse is quoted under Jayadeva referring to *Gaud-endra*. There are at least two other Jayadevas, Sanskrit poets, earlier than the 13th century; but none of them is known to have any concern with *Gauḍendra*. Is this verse then taken from some unknown poem of the *Gītagovinda-kāra?* In the *S K*. besides this verse[1] (and the two taken from the *Gītagovinda*), 28 more are quoted under the name Jayadeva; they cannot be traced in the *Prasanna-Rāghava* of the dramatist Jayadeva, or the *candr-āloka* of the rhetorician Jayadeva. Possibly some of them may be from an unknown poem of our Bengal Jayadeva

Other poems of Jayadeva.

No poem was more popular in India than the *Gīta-govinda*. Numerous MSS. of it lie scattered in different parts of India from Kaśmīr and Nepal downwards. The search for Sanskrit MSS. has brought to light no less than thirty-seven commentaries (Aufrecht's *Cat. Catalog.*); and the earliest known the *Rasika-priyā* goes back to the middle of the fifteenth century with the powerful king Kumbhakarṇa himself as the commentator. The poem has been imitated in works like the *Rāma-gīta-govinda*, *Abhinava-gīta-govinda* and others. It has been several times translated in the vernaculars, Bengali, Oṛiyā and Hindi. It ranks among the quasi-sacred works of the Vaiṣṇavas; and its songs were repeatedly sung by Caitanya and his followers in their processions.

The Popularity of the Gīta-govinda.

A remarkable testimony to its popularity is borne out by inscriptions. In an Oriyā inscription of Puri dated 17th July, A.D. 1499, the king Pratāparudradeva ordered that the dancing girls and the Vaiṣṇava singers should learn and sing only the songs of the *Gītagovinda*, and should not learn or sing any other songs before Lords Jagannātha and Balarāma (J.A.S.B., LXII, 1893, pp. 96-7). In another inscription dated 29th June, A.D. 1292,[2]

As testified by inscriptions.

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[1] लक्ष्मीकेलिभुजङ्गमसमहरे सङ्कल्पकल्पद्रुम
श्रेयः साधकसङ्कटङ्कटकलागाङ्केयरङ्गप्रियः।
गौड़ेन्द्रप्रतिराजराजकसभालङ्कारकारार्पित
प्रत्यर्थिक्षितिपालबालकसतां दृष्टोसितुष्टावयं॥ जयदेवस्य॥

S.K., III. 11·5, fol. 123*a*.

The reader will note the alliterations in each line.

[2] This inscription, as yet unedited, was found on a stone recovered at Anāvāda, old Pāṭan, Kādi Division, Baroda, from a tank which was being excavated in Saṁvat 1956 as a famine work. The date runs in the original as follows:—*Saṁvat 1348 varṣe Āṣāḍha Śudi 13 ravāv-ādyeha Śrīmad-*

the verse I. (pra° 1). 12, *vedān-uddharate*, is quoted in the very beginning as the invocation stanza of the *praśasti*. Such an honour shows that the work had already within a century become quasi-sacred.

The *Gītagovinda* has been many times printed, but the only good edition available is that from the Nirṇaya-sāgara Press, Bombay. Lassen's edition (1836) is out of print. A critical edition is a great desideratum; and here is a nice opportunity for a Bengal scholar.

(*VIII*) *DHARMA-JOGEŚVARA.*

Dharma-Jogeśvara, a Bengal Poet.

In the *S.K.* a verse of his is quoted highly lauding the gifts of a *Gaudendra*[1] and thus pointing to his being a Bengal poet. Besides this, the *S.K.* quotes eleven more verses under this name,[2] and distinguishes him from Yogeśvara (51 verses quoted) and Karañja-Yogeśvara (2 verses quoted).

(*IX*) *DHOYĪ* OR *DHOYĪKA.*

Author of the *Pavana-dūtaṃ*. Already treated by me (J.A.S.B. New Series, 1905, I. pp. 41–71; ib., 1906, pp. 15, 18 22).

(*X*) *PAŚUPATI* OR *PAŚUPATIDHARA.*

Paśupati, a writer on rites.

Elder brother of Halāyudha; wrote the *Dasa-karmma-paddhati* (°*dīpikā*), a guide to the performance of the ten domestic ceremonies according to the Śukla Yajurveda, Kāṇva-śākhā. He was *Rāja-Paṇḍita*, according to colophon.[3] His work should be

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Aṇahilavāṭak-ādhiṣṭhita-Mahā[*rājādhi-**]*rāja-Śrī-Śāraṅgadeva-kalyāṇa-vijaya rājye*. The date is apparently in the year, southern expired. The inscription records the erection of a Kṛṣṇa temple I am indebted to Mr. D. R. Bhaṇḍārkar for these informations.

[1] वासः स्वर्णगृहेषु सख्यममरैः कल्पद्रुमाणां वने
क्रीड़ा स्वर्गवधूगणैः सह सुधाकण्ठं मुदा पीयते।
रुष्टेनेदमकारि देव भवता हत्वा रणे वैरिणां
तुष्टः प्रैष्यजनाय वेद्मिनपरं गौड़ेन्द्र किं दास्यसि॥

III. 16·4, fol. 125*a*.

[2] *S.K.*-II. 23·1, II. 33·4, II. 58·2, II. 62·4, II. 120·1, II. 134·3; IV. 2·4-5, IV. 44·5, IV. 46·3, IV. 61·2

[3] इति राजपण्डितश्रीपशुपतिविरचिता यजुर्व्वेदिकाण्वादिशाखानां विवाहादिदशसंस्कारपद्धतिः समाप्ता। The colophon of the *Srāddha-paddhati* runs:—इति यजुर्व्वेदौक्ताभ्युदयिकश्राद्धं समाप्तं।

differentiated from that of the same name by Bhavadeva Bhaṭṭa (Sāmaveda) or by Nārāyaṇa Paṇḍita (Ṛgveda).

In the introduction to the *Brāhmaṇa-sarvvasva* Halāyudha noted that Paśupati had written a *Paddhati* or manual on Śrāddhas (v. 24) and another *Paddhati* on Pāka-Yajña (v. 43).[1] No MS. of the latter had as yet come to light. The *Śrāddha-paddhati* is found in the As. Soc. Library, a Bengali MS., fol. 42–52.[1]

Paśupatidhara, a poet.

In the *S.K.* one verse is quoted under the name Paśupatidhara.[2] Whether he is identical with Paśupati or not, I cannot say. Umāpatidhara has sometimes been shown as Umāpati. In the *S.K.* are named several authors with °*Dhara* at the end, such as, Dharaṇīdhara, Lakṣmīdhara, Śaṅkaradhara, Saṅkhadhara, Sāgaradhara, Sañcādhara, Sūryadhara.

(*XI*) *BALABHADRA.*

Balabhadra, pupil of Govardhana.

A pupil of Ācārya Govardhana, who with Udayana (*s.v.*) revised his Ācārya's poem *Āryā-sapta-śati.* Whether he is identical with Balabhadra, under whose name five (5) verses are quoted in the *S.K.*,[3] cannot be said at present. A sample is extracted below :—

हंसश्रेणिकुतूहलेन।कलयन् भूषा कपालावलिं
वालामिन्दुकलां मृणालरभसादान्दोलयन् पाणिना।
रक्ताम्भोजधियो च लोचनपुटं लालाटमुद्घाटयन्
पायाद्वः पितुरङ्कभाक् प्रिमुजनक्रीड़ोन्मुखः षण्मुखः ॥

I. 29-4, fol. 19*b*.

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[1] For verse 24, see Īsāna. For verse 43 :—

निबन्धेन समेतां यत्।कयच्चास्य पद्धतिम्।
ज्यैष्ठः पशुपतिश्चक्रे तेनास्माभिर्न मा हृता ॥ ४३ ॥

[2] परिणतशरत्कान्ता पाण्डरा गण्डभित्तिः
कुचकलसमुखश्रीः कालिमानं दधाति।
व्यपगतहरिद्राभावं पीनतामेति मध्यं
वपुरतिशयगौरं गर्भमाविष्करोति ॥

S.K.—II. 10·5, fol. 49*b*.

[3] *S.K.*—I. 29·4; II. 15·1, II. 28·1; IV. 19·5, IV. 50·3.

(*XII*) *BALLĀLASENADEVA.*

The king Ballālasenadeva, as writer.

Father of Lakṣmaṇasenadeva (A.D. 1160 - 61—1169 - 70). In A.D. 1169–70 he completed the *Dāna-sāgara*, a manual describing the various kinds of gifts and the connected ceremonies. In A.D. 1168-69 he started the compilation of the *Adbhuta-sāgara*, but died before completing it on the banks of the Ganges. It was completed by Lakṣmaṇasena. The *Adbhuta-sāgara* deals with omens and portents.[1] It gives the Śaka *bhuja-vasu-daśa* or 1082 as his first year. Aniruddha (*s.v.*) was his *guru*, or spiritual guide.

The *S.K.* and the *Ś.P.* (No. 764) quote only one of his verses:—

विरम तिमिर साहसादमुष्मा-

[a]द्दिनमणि निरस्तमुपागतस्ततः किं ।

कलयसि न पुरो महोमहोर्म्मि-

[b]प्रतवियदभ्युदयत्ययं [c]सुधांशुः ॥ [d]श्रीवल्लालसेनदेवपादाणां ॥ [3]

[a] यदि रविरस्तमितः स्वतस्ततः किम् —*S.P.* [b] द्युतिनिधिरभ्यु—*S.P.*

[c] मृगाङ्कः—*S.P.* [d] वल्लालसेन—*S.P.*

(*XIII*) *MADHU* OR *DHARMĀDHIKARAṆA MADHU.*

The Judge Madhu.

In the *S.K.* under *Dharmādhikaraṇa* Madhu a verse is quoted praising Vaṭudāsa (the anthologist's father) as the right-hand staff of the king Lakṣmaṇasena.[2] Presumably, therefore, he was a Bengal man, and as his title signifies a judge. Under the name Madhu seven more verses are quoted in the *S.K.*[3] He may be identical with the judge.

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[1] For references to the MSS. of the *Dāna-sāgara* and the *Adbhuta-sāgara*, see my article, J.A.S.B., N.S, 1905, I. p. 46, Note 1. In addition, one MS. of the *Adbhuta-sāgara* is in India Government, and one MS., apparently a fragment, noticed in the "Notices" (N.S.), Vol. II. pp. 2-3 (No. 3). One copy of the *Dāna-sāgara* is in the As. Soc.'s Library.

[2] आनन्दं विदुषां तनोति तनुते कर्णज्वरं विद्विषां

श्रीमादिवराहपादसरसीजन्म[a]प्रणामप्रियः ।

सद्बन्धुर्गुणसिन्धवन्धलगुड़ो [b]धर्म्मस्य [b]वर्त्मावनेः

श्रीमल्लक्ष्मणसेनदक्षिणभुजादण्डोऽपि चण्डो वटः ॥

[a] प्रथाधाम—S. [b] वर्म्मा—A. धर्म्मा—S. V. 76·1, fol. 201b.

[3] S.K.—II. 14·2, II. 147·1; V. 7·2, V. 9·1, V. 15·4, V. 66·2-3.

(*XIV*) *MĀDHAVASENA.*

Mādhavasena, a royal poet.

Under this name one verse is quoted in the *S.K.*[1] He probably belongs to the royal family. Five more verses are found in that anthology under Mādhava.[2] Whether he is the same as Mādhavasena or not cannot be definitely said at present.

(*XV*) *LAKṢMAṆASENADEVA.*

The king Lakṣmaṇasenadeva as poet.

The well-known Sena king (A.D. 1169-70—1200?) The *S.K.* quotes nine verses of his[3] and the *Ś.P.* one (No. 923). In the inscriptions he is called *Parama-vaiṣṇava*, and they begin with an invocation to Nārāyaṇa. His verses, therefore, often refer to Kṛṣṇa; and where not, are amatory in nature. They are not wanting in elegance; *e.g.*, take the following three:—

(1) तीर्य्यक्कन्धरमंसदेशमिलित [a]श्रोत्रावतंस[b]स्फुरद्
होत्तम्भितकेशपाशमनुजभ्रुवल्लरीविभ्रमं ।
गुञ्जद्वेणुनिवेशिताधरपुटस्फूत्करोधानन
[c]न्यक्तमीलितदृष्टिगोपवधुभो विष्णोर्मुखं पातु वः ॥

[a] श्रोतां—Sr. [b] न्धरद्—Sr. [c] न्यक्ता—Sr. I. 57·2, fol. 28*b*.

(2) व्यविरतमधुपानागारमिन्दिन्दिरागा-
मभिसरणनिकुञ्जं राजहंसीकुलस्य ।
प्रवितत वञ्जशालं मद्यपद्मालयाया
[a]वितरति रतिमन्तोरेष लीलातड़ागः ॥

[a] विभदति—Sr. V. 12·1, fol. 175*b*.

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[1] यच्चाण्डालगृहाङ्गनेषु वसतिः कौलेयकानां कुले
जन्म खोदरपूरणञ्च विधसैर्न्नं स्पर्शयोग्यं वपुः ।
[a]तन्मृष्टं सकलं त्वयाद्य सुनक क्षोणीपते राज्यया
यत् त्वं काञ्चनभृङ्गला वलयितः प्रासादमारोहति ॥

[a] उन्मृष्टं—Aufrecht. IV. 48·3, fol. 160*b*. Aufrecht, Z.D.M.G. 36, 540-1.

[2] *S.K.*—I. 48·5; II. 164·4; III. 6·2; IV. 22.2, IV. 35·3.

[3] *S.K.*—I. 55·2 (*s.v.* Jayadeva), I. 57·2; II. 16·2, II. 61·5, II. 80·1, II. 82·3-4, II. 105·3, II. 108·1; V. 12·1, V. 66·4.

(3) एते पुरः सुरभि कोमलहोमधूम
लेखानिपीतनवपल्लवशोणिमानः ।
पुण्याश्रमाः श्रुतिसमीहितसामगीति
साकूतनिश्चलकुरङ्गकुलाः स्फुरन्ति ॥

V. 66·4, fol. 197*b*.

(*XVI*) *VETĀLA, BHAṬṬA VETĀLA,* OR *RĀJAVETĀLA.*

Vetāla, a Bengal Poet.

In the *S.K.* under Vetāla one verse is quoted, which laud highly Vaṭudāsa.[1] He was therefore presumably a Bengal poet. One more verse has been extracted in that anthology under Bhaṭṭa Vetāla (iv. 34.3) and another under Rāja-Vetāla (iii. 46.2), probably the same author.

(*XVII*) *VYĀSA* (*KAVIRĀJA*).

Vyāsa, a Bengal Poet.

One stanza is quoted in the *S.K.* under this name, praising Vaṭudāsa.[2] He is thus likely a Bengal poet of the Sena period. The word *Kavirāja* may mean a physician.

(*XIX*) *ŚARAṆA, CIRANTAṆA-ŚARAṆA, ŚARAṆADATTA, ŚARAṆADEVA.*

Śaraṇa, a Contemporary Poet of Jayadeva.

In the *S.K.*, one verse is extracted under Cirantaṇa-Śaraṇa (*s.v.*), one under Śaraṇadatta, four under Śaraṇadeva, and 15 under Śaraṇa.[3] They seem to be varying forms of the same name.

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[1] पयोधिपरिमाणेषु भ्रु(?,णेषु चरणेषु च ।
वन्दीन्द्राणान्नरेन्द्राणां वटुदासस्तरङ्गकः ॥ [a]वेतालस्य ॥

[a] राजवेतालस्य—A. V. 76·3, Sr. (not in A, except the name.)

[2] तत् प्राङ्गनान्तमधिरोहति कल्पवल्ली
चिन्तामणिर्लुठति [a]पादतले च तस्य ।
[b]येनिश्चितः सुहृत्सागरपार[c]दूरा
विश्वानुरञ्जनपटुर्वटुदासदेवः ॥

[a] पाणि—A. [b] येनेक्षतः—A. [c] हस्वा—Sr.. V. 76·5, fol. 202*a*.

[3] S K.—IV. 1·2 (C. Śaraṇa); III. 2·5 (Śaraṇadatta); I. 69·5, II. 133·2, III. 15·4, III. 54·5 (Śaraṇadeva); I. 61·2-3, I. 87·1, II. 13·2-3, II. 36·4, III. 14, 4-5, III. 16·5, III. 50·5, IV. 50·4, IV. 64·1 V. 1·3-5 (Śaraṇa).

No work of this poet has yet been discovered. But from a verse quoted in the *S.K.*, he appears to have flourished in the Sena rule, and another verse by deprecating all the neighbouring kings indirectly lends support to it.[1] The poet's posterior limit is fixed by reference in the *Gīta-Govinda*, I. 4, *Saraṇah slāghyo duruha-druteḥ*, *i.e.*, Śaraṇa is best in composing difficult verses. His time probably falls in the 4th quarter of the twelfth century. One sample is given here :—

कामं कामयते न केलि नलिनीं ना मोदते कौमुदी
निस्यन्दैर्न्न समीहते मृगदृशा मालापलीलामपि ।
सौदन्नेष निशासु निःसहतनुर्भोगाभिलाषालसै
रङ्गैरुत्स्यति चेतसि व्रजबधूमाधाय मुग्धो हरिः ॥

I. 61·4, fol. 30*b*.

(*XIX*) *ŚRĪDHARADĀSA.*

Śrīdharadāsa, the Anthologist.

The anthologist, son of Vaṭudāsa described as *Mahāsāmanta-cuḍāmaṇi* (chief officer) and friend of the king Lakṣmaṇasena.[2] Vaṭudāsa must have been a man of high position as verses

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[1] देवः कुप्यत्तवा विचिन्त्य विनयं प्रीतोस्तु वामादृशै
र्व्याच्छट्टिः प्रमुकीर्त्तिम[a]प्रतिहतां वक्तव्यमेवोचितं ।
सेवाभिर्यदि सेनवंशतिलकादासादनीयाः श्रियः
सङ्कल्पानुविधायिनः सुरतरस्तत् केन हार्य्योमदः ॥

[a] मप्यति, A., S. III. 54·5, fol. 14-16.

भुक्तेपाद्गौड़लक्ष्मीं जयति विजयते केलिमात्रात् कलिङ्गां
श्वेतश्चेदिक्षितीन्दोस्तपति वितपते सूर्य्यवत् दुर्जनेषु ।
स्वेच्छं म्लेच्छान् विनाशं नयति विनयते कामरूपाभिमानं
काञ्ची[a]भर्त्तुर्व्विकाशं हरति विहरते मुर्द्धियो [b]मागधस्य ॥

[a] भर्तुःप्र, Sr. [b] माधवस्य, Sr. III. 15·4, fol. 125*a*. M.M.C.—1-iv-06.

[2] तस्यासीत् प्रतिराजउद्धतमहासामन्तचूड़ामणि-
र्ब्रह्मा श्रीवटुदास इत्यनुपमप्रेमैकपात्रं सखा ।
तापं सन्तमसं हरन्नहरहः।ह्नः कीर्त्तिं दधत् कौमुदीं
साक्षादक्षयसुन्दतामृतमयः पूर्णः कलानां निधिः ॥ [२ ॥], Fol. 1*b*.

lauding him by men like Umāpatidhara, the judge Madhu and others are quoted by his son at the end of the anthology (V. 76·1-5).

The anthology is called *Sad-ukti-karṇ-āmṛta* only at two places, *viz.*, at the end of first *pravāha* and at the very end; otherwise everywhere else (introductory verse 5, and the colophons of the other *pravāhas*) it is called *Sūkti-karṇ-āmṛta*. It is said to consist of five *pravāhas* (currents), 476 *vīcis* (waves) and 2,380 verses, at five to each *vīci* (*vide* the colophon at the end). But the three MSS. I have examined actually contain 474 *vīcis*, 2,363 verses. Two *vīcis* have, in fact, been omitted in the second *pravāha*, and less than five verses quoted in I. 95 (4), II. 3 (4), II. 129 (3), IV. 21 (4), IV. 68 (3) and V. 25 (4). Each verse ends, mostly, with the author's name; or where not known, with *kasyacit* or *kasy-āpi*. In ten verses only the authors' names are wanting, probably dropped at the time of copying. More than four hundred and fifty authors have been named. Towards the end the date of completion is given as Śaka 1027, Phālguṇa 20.[1] This does not admit of verification; if a northern expired year, it is equivalent to 11th February, A.D. 1206. The year in the Lakṣmaṇasena era, *ras-aika-viṁśe*, is ambiguous; *ras-āśītitame* would have made it agree with the Śaka year. If a mistake for *rasaikatuṁśe*, it may be the actual regnal year of the king Lakṣmaṇasena (1169 and 37 = 1206).

In the colophon at the end of each *pravāha*, Śrīdharadāsa calls himself *Mahā-māṇḍalika* or the divisional officer (officer in charge of a *Mahāmaṇḍala*). The work bears ample testimony to his taste and industry. Nearly two thousand four hundred verses have been compiled from more than four hundred and fifty authors named and others not named; they have been fairly selected and sorted under different subjects; and they bespeak a fairly wide culture with formation of libraries. Without his compilation it would have been impossible to write this sketch of Bengal writers.

(XX) *SAÑCĀDHARA, SĀÑCĀDHARA, SĀÑCADHARA.*

Sāñcadhara, a Bengal Poet.

One verse under Sāñcadhara is quoted in the *S.K.*, lauding Vaṭudāsa.[2] He is thus likely a Bengal poet. In the same anthology four more

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[1] शाके सप्तविंशत्यधिकशतोपेतदशशतेशरदां श्रीमल्लक्ष्मणसेनक्षितिपस्य रसैकविंशे (?) सवितुर्गत्या फाल्गुणविंशेषु परार्धेहतवे कुतुकात् श्रीधरदासेनेदं सदुक्तिकर्णामृतं चक्रे। Fol. 201 *a-b*.

[2] यो हेलोक्तिभिराङ्किते धनवतामुद्दिग्धकान्तावचो
गुम्फैर्लब्धगतिः क्षधाकुलशिशुक्रेङ्कारसम्वर्द्धितः।
पीत्वा जङ्गमकल्पभूव हरव (?) त्वद्वाचामेतां सुधा
सघ्रो (?) चौं वटुदास शाम्यतु समे प्रोद्दामकर्णज्वरः॥

V. 76·2, fol. 201*b*.

verses are extracted under Sañcādhara and three under Sāñcādhara[1]; they are apparently the varying forms of the same name.

(*XIX*) *HALĀYUDHA.*

The Judge Halāyudha, a writer on rituals.

The youngest and the most distinguished of the three brothers (*s.v.* Iśāna, Paśupati). The few facts known of him and his family are taken almost exclusively from his *Brāhmaṇa-sarvvsva.* His father born in the line of Vātsya muni (Introd. verse 4), married Ujjalā (v. 8.), and became *dharmm-ādhyakṣa* or judge (v. 5). Halayudha was born of them (vv. 9, 10), and had two elder brothers, Iśāna and Paśupati (vv 24. 43). Halāyudha in his early years was appointed *Rāja-paṇḍita*, (v. 12), in youth raised by Lakṣmaṇasena to the post of *Mahāmātya* (vv. 10, 12), and in his mature age confirmed as senior judge, *Mahādharmm-ādhikāra* or *Mahādharmm-ādhyakṣya* (v. 12, and the colophons of the sections).

Before taking up this work he had written the *Mīmāṁsā-sarvvasva, Vaiṣṇava-sarvvasva, Śaiva-sarvvasva* and *Paṇḍita-sarvvasva* (v. 19).[2] He composed the *Brāhmaṇa-sarvvasva* because the Brāhmaṇas in Rāḍha and Vārendra did not know the Vedic rites.[3] He dealt with the rites laid down in the Vājasaneyi-saṁhitā, Kāṇva-śākhā. In the *Cat. Catalog.* two more works of his are named—*Dvija-nayana*, and a *ṭikā* on the *Śrāddha-paddhati.* Excepting the *Brāhmaṇa-sarvvasva* no other work of his has yet been found. In the *S.K.* three verses are quoted under Halāyudha.[4] He is to be differentiated from Halāyudha of the *Purāṇa-sarvvasva* (composed in A.D. 1475), and of the *Dharmma-viveka* (called therein *Mahā-kavi*, H. P. Śāstri's "Notices," I. pp. 195-6).

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[1] *S.K.*—I. 21·2-5 (Sañcādhara); II. 34·4-5, V. 54·5, V. 76·2 (Sāñcādhara).

[2] मीमांसासर्व्वस्वं वैष्णवसर्व्वस्वमद्भुत शैवसर्व्वस्वम् ।
पण्डितसर्व्वस्वमसौ सर्व्वस्वं सर्व्वधीराणाम् ॥ १९ ॥

[3] तत्र च कलौ आयुः प्राज्ञोत्साहश्रद्धादीनामल्पत्वात् उत्कलपाश्चात्यादिभिर्वेदाध्ययनमात्रं क्रियते, राढ़ीयवारेन्द्रैस्त्वध्ययनं विना क्रियदेकवेदार्थस्य कर्म्ममिमांसाद्वारेण यज्ञेति कर्त्तव्यताविचारः क्रियते...।...किन्तु यथाविध्यिध्ययनपूर्व्वके वेदार्थज्ञाने । एतैस्तु राढ़ीयवारेन्द्रकैरनुचिताचार एव केवलः क्रियते । एवं चोभयोरपि ग्रन्थार्थतो वेदज्ञानं नास्त्येव।..... तदेवं व्यवस्थिते शास्त्रार्थे कृत्स्न वेदाध्ययनसमार्थानां राढ़ीयवारेन्द्रकद्विजादीनां काण्वशाखिवाजसनेयिनां कर्म्मानुष्ठानार्थं ... ।

[4] *S.K.*—I. 30·5, I. 63·4; V. 72·3. They have been quoted by Aufrecht, Z.D.M.G., 36, 529-30.

23. *The Proportion between the Sexes in* HELOPELTIS THEIVORA, *Waterhouse.*—*By* H. H. MANN, D.SC.

The study of the relative proportion of males and females among various classes of animals, and especially among insects, has led to comparatively important conclusions, and a good deal of information has been gathered in recent years on the subject. I am not aware, however, that any member of the Heteroptera has been examined in this sense either by breeding or by the numbering of caught specimens. The fact that the Capsid bug, *Helopeltis theivora*, is a serious enemy of the tea-plant, and the kindness and enthusiasm of an Assam planter (Mr. J. J. Smith of Behalli, Assam), have enabled me to continue systematic and daily observations of the relative proportion of the sexes now for over three years, and the figures thus obtained form the substance of the present paper.

Helopeltis theivora, Waterhouse, the so-called 'mosquito blight' of tea, is the most serious insect-enemy of the tea-planter. It passes all stages of its life on the tea-plant, and at every stage it feeds on the youngest leaves and shoots by inserting the rostrum into the substance of the plant, and sucking out the juice. As a result, the leaves become covered with minute irregularly round patches of brown withered tissue, the growth of the shoot is stopped, and the young leaves (the commercial product) cease to be produced. An examination of the size of the spots sucked out by the insects indicates, to an experienced observer, very closely the age of the insect which has attacked the plant; with adult insects the patches measure 2 to 3 millimeters in diameter, while they are usually on the outer parts of the bushes on older leaves than those generally used by the larvæ.

The sexes are thus described by Distant (in Blandford's "Fauna of British India," Heteroptera, Vol. II, pp. 440-441):—

"*Male.*—Head and pronotum shining black, much resembling "the same sex of the preceding species (*Helopeltis antonii*), but "with the scutellar horn more curved backward at apex.

"*Female.*—Black, pronotum bright, shining, stramineous, or "ochraceous, with a subapical transverse fascia and the basal area "shining black; scutellum ochraceous more or less suffused with "black, the horn long, black, piceous at apex; antennæ dark-"brown, basal joint paler, yellowish at base; femora dark brown, "mottled with ochraeous, and with a distinct pale annulation near "base; tibiæ ochraceous, speckled with fuscous; head beneath "with a lateral luteous fascia on each side, more obscurely seen "above; abdomen pale, creamy-ochraceous, the apical third black."

"Length 6 to 7 millim."

To this description one can add the following additional information with regard to the male: The antennæ are shining, piceous, ochraceous at the base. The pronotum is shining black with a patch of ochraceous differing considerably in size in different

specimens, but always much smaller than with the female. The insect, as a whole, appears distinctly smaller than the female.

It will be seen that there is absolutely no difficulty even at first sight in distinguishing the sexes. The points which settle the sex to a casual observer, are :—

1. The size of the orange spot on the pronotum and scutellum. In the female it is much bigger than in the male, and in fact in the latter it is often hardly to be seen.

2. The shape of the abdomen, which is always larger and stouter in the female.

3. The size of the insect, the female being always distinctly bigger in every respect.

4. The presence of the ovipositor in the female.

It is obvious that the examination of the many thousands of samples could not be made by myself personally, but the ease of distinction prevents the possibility of any material error, and I have checked personally a very large number.

The method adopted in the present investigation was to employ boys and girls to catch the insects practically day by day throughout the year. In the two places from which results are here reported, there have been about 40 children employed for this purpose throughout almost the whole of the past three years. The catching is not an easy business, and it is usually some months before the children get expert at the work. Hence the earlier results are probably not quite so reliable as the later ones. But once they have become accustomed to the way of catching the insects, it is rare that an adult, male or female, escapes. They are about equally difficult to catch, and I have convinced myself that no material error is introduced on this account. They are found most abundantly in the early morning and late afternoon. During the hotter part of the day, as a rule, the insects hide away.

The only error which may seriously affect the figures, is the fact that the numbers were, on the whole, declining during the three years, owing to the measures taken against the insect. It is a factor which might influence the relative numbers of the sexes, in a manner of which we know nothing.

The two sites for collection were situated at Behalli and Bedetti, places about three miles apart in the Darrang district of Assam. Both of these are tea-gardens in which much of the tea was seriously attacked by the Helopeltis. It should be noted that the insect is present only in small numbers during the early part of the year, reaching a minimum in February, March and April. In June it commences rapidly to increase in numbers, and during July, August, September, October, and November it is exceedingly numerous, while in December the number usually, though not always, rapidly drops. I give a special table of rainfall each month at Behalli, in order that its distribution relative to rain may be ascertained.

If the three years are taken together, the figures seem to indicate :—

1. That the males are always present in much smaller numbers than the females.

2. That the more adverse the conditions, the less is usually the predominance of females. This is indicated very clearly in the Behalli results for July, August, September and October in the three several years, when the attack was at its height.

	1903.		1904.		1905.	
	Number of insects.	Males % of Females.	Number of insects.	Males % of Females.	Number of insects.	Males % of Females.
July	20,446	14·2	12,491	38·6	6,343	52·0
August ...	19,503	10·6	13,685	31·9	6,089	63·4
September ...	13.742	11·9	11,895	34·0	9,360	49·2
October ...	13,668	10·6	15,393	54·0	8,328	40·1

In the first year the efforts at keeping the insects in check on these plots were hardly successful; in the second they were more so; while in the third the insects were never able to get out of hand. The same story is told by the figures given for the second place of observation (Bedetti).

In explanation of the fact of the sudden drop in the number of insects in January or February in each year, it should be noted that it is at this season pruning is carried out, and this results in the removal and destruction of many millions of eggs from the plants. Hence the drop in numbers is not entirely a seasonal variation.

Behalli,—April, 1903—March, 1906.

Date.	Male.	Female.	Males as % of Females.	Rainfall : Inches.	No. of Rainy days.
			1903.		
April	131	685	19·1		
May	478	1,710	27·7		
June	856	4,174	20·5		
July	2,565	18,081	14·2	Not	Not
August	1,869	17,634	10·6		
September	1,462	12,280	11·9	noted	noted
October	1,308	12,360	10·6		
November	3,393	14,188	23·9		
December	6,177	16,300	37·9		
			1904.		
January	13	590	2·2	·43	3
February	140	638	21·9	1·97	6
March	81	1,324	6·1	2·01	9
April	381	3,226	11·8	not noted	not noted
May	910	5,044	18 0	17·28	27
June	2,137	5,557	38·5	16·68	16
July	3,477	9,014	38 6	16·91	23
August	3,312	10,373	31·9	29 12	26
September	3,016	8,879	34 0	8·15	16
October	5,397	9,996	54 0	4·21	10
November	9,180	18,803	48·8	1·43	9
December	2.720	7,229	37 6	·12	1
			1905.		
January	399	1,118	35·7	·21	3
February	17	51	33·3	·35	3
March	56	140	40·0	3 95	11
April	98	262	37·4	11·84	19
May	323	459	70 4	6·98	12
June	955	1534	62·3	16 08	20
July	2,171	4.172	52·0	14·81	20
August	1,740	4,349	63·4	32·12	27
September	3,087	6,273	49·2	8·20	17
October	2,385	5,943	40·1	3 12	8
November	3,340	9,341	35·7	2·89	7
December	3,491	10,623	32·9	·88	7
			1906.		
January	424	2,402	17·6	·67	3
February	101	931	10 8	2 21	8
March	503	2,710	18·5	2·58	8

Bedetti,—January, 1903—March, 1906.

Date.	Male.	Female.	Males as % of Females.
		1903.	
January	20	27	74·1
February	48	40	120·0
March	60	101	59·4
April	25	81	30 8
May	11	40	27·5
June	46	259	17·7
July	116	677	17·1
August	132	1,506	8 7
September	202	2.069	9·8
October	631	2,585	24·4
November	975	4,132	23·6
December	882	5,619	15·7
		1904.	
January	13	635	20·5
February	18	194	9·3
March	4	148	2·7
April	0	64	...
May	6	94	6·4
Jnne	147	368	39·9
July	395	1,091	36·2
August	451	1,407	32·1
September	670	2,451	27·3
October	865	2,498	34·6
November	970	2,432	38·8
December	566	1,638	34·7
		1905.	
January	48	94	51·1
February	1	55	18·2
March	1	1	100
April	0	0	...
May	5	8	62·5
June	20	30	66·7
July	67	147	45·6
August	35	97	36 1
September	30	93	32·3
October	87	167	52·1
November	49	245	20·0
December	13	149	8·7
		1906.	
January	0	6	...
February	0	6	...
March	1	16	6·2

24. *Preliminary Note on the Rats of Calcutta.*—*By* W. C. Hossack, M.D., *District Medical Officer, Calcutta.*

The important part which, according to most authorities, the parasites of the rat play in the propagation of plague, has rendered it a matter of considerable practical importance to ascertain definitely what are the chief varieties of rats found in Calcutta, and their relative frequence. Thanks to rewards for the destruction of rats, it has been possible to obtain a very large amount of material, and, by working on large series, to collect valuable information as to the variations normally found in the different species and varieties. The variations caused by immaturity are particularly interesting and have a very practical bearing on the identification of species, but the subject is too technical to be more than indicated here. There are three species of rat commonly found in Calcutta, and a fourth, though quite rare, is very striking from its very large size, *viz.*, the Lesser or Northern India Bandicoot.

Key to Rats of Calcutta.

A. Long-tailed species (tail 115-130 per cent. of length of head and body).

(1) *Mus rattus alexandrinus.*—Medium sized or small. Ears long and wide and standing up from head, which is long and pointed. Slender body, feet long, slender and dark, head long and pointed. Median pads of hind foot cordiform and the external one generally showing a small extra tubercle. The tail is uniformly dark. This is a house rat; it corresponds to the Black Rat of Europe.—Mammae, 2 pectoral, 3 inguinal.

B. Short or Medium Tailed.

(2) *Mus decumanus.*—The Brown Rat of Europe. Heavy-bodied, large rat with heavy tail, the length of which is 90 per cent. of length of head and body. The tail is distinctive, being white or distinctly lighter below. The feet are large, heavy and flesh-coloured, with cordiform median pads on hind foot like *Mus alexandrinus*. Jowl heavy and broad. No long piles or bristles on back, though longer hairs are present. *M. decumanus* does not bristle or spit when caged. The molars are tubercular. Eyes small and ears round and short.—Mammae, 3 pectoral, 3 inguinal.

(3) *Nesokia bengalensis* (Indian Mole Rat)—Heavy-bodied and of moderate size, like a small *decumanus* but has long piles or bristles on its back. The tail is only about 80 per cent. of the length of the head and body, and is uniformly dark; it tends to be rather attenuated and pointed at the end. Pads of the hind foot tend to be small and circular, not cordiform. The proximo-

external is very small, and in 2 per cent of specimens is wanting. The feet and nose are not flesh-coloured but rather purplish. The fur is very thin, bristly and harsh, and in drowned specimens the half-naked bristly, pig-like appearance is marked. When caged *N. bengalensis* bristles, spits and gnashes its teeth. Molars instead of tubercles show transverse laminæ. Burrowing, stable and grain-shop rat.—Mammae, 4 pectoral, 4 inguinal, but very variable.

(4) *Nesokia nemorivagus* (Lesser Bandicoot).—An extremely large and heavy-bodied rat. It may be confused with very large specimens of *M. decumanus*, but has a deep, narrow, greyhound-like muzzle with very large ears. On the back are very long piles 5-7 c m., long. The feet are black and very large, with pads as in *N. bengalensis*. The tail is nearly equal to the head and body and is uniformly dark, more finely ringed than in *M. decumanus*. It has the same savage demeanour when caged as *N. bengalensis*. Molars with transverse laminæ. *It is* a burrowing, grain-storing rat, but is captured in houses.

It is as well here to mention *Crocidura cærulea*, the Grey Musk Shrew, commonly known as the musk rat. This is not a rat at all but is one of the Insectivora, being closely allied to the moles and the shrews. It feeds mainly on cockroaches. It is very common in Calcutta, but in many thousands of trapped rats I have only come across a single specimen.

Under *Mus alexandrinus* I include all rats in Calcutta of the *rattus* type. My specimens certainly include *M. rufescens*, but I have still got to work them out. They show an extreme range of variation in colour from almost black with dark belly to pale cinnamon or brown with white belly, but as every gradation is shown I am at present inclined to think they are all the one rat. Breeding experiments will be required to settle the problem.[1]

In this paper all I aim at is to give a rough idea of the rats of Calcutta, and the external characteristics by which they may be distinguished by one who is not an expert. Hence I have said nothing about colour, as it is an extremely variable characteristic and a most unreliable means of differentiation. In the live rat, the colour seems more or less the same in all of them, for even the most sharply defined white belly is almost unnoticeable unless the rat is sitting up at its toilet. All may be described as brown, but in *alexandrinus* the brown may be a light yellowish-brown, and in the two Nesokias it tends to be a cold greyish-brown with no

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[1] Since this was written I have secured two specimens which were black and one which was almost quite white though the eyes were black, examples of partial melanism and albinism respectively. I have almost completed my examination of *rattus* series, and find that no distinction can be drawn between *rufescens* and *alexandrinus*, as they intergrade completely. The smaller specimens which agree with the description of *rufescens* are simply young specimens of *alexandrinus*. May 16th, 1906.

rufous tendency. *Mus rattus* nee l n ·ver be mistaken, as even when the long tail is mutilated, as it frequently is, the very large prominent eyes and the large outstanding ears are quite characteristic. Apart from its size, the bicoloured tail of *decumanus* will nearly always distinguish it. If the lower surface is only a very little lighter, then a glance at the large flesh-coloured feet will settle the species, and an examination of the pads shows them large and cordiform or heartshaped just as in *Mus rattus*. The purplish feet and snout and the shorter much-tapered tail make the recognition of *Nesokia bengalensis* also easy. The long, black bristles, 4-5 c.m. long, are unmistakable. The foot pads will settle any doubt, being small, rounded and with the proximo external almost absent.

The large black feet and slender muzzle at once separate the Bandicoot from the largest brown rat. The following is a summary of the principal measurements in centimetres To get the length of head and body it is important to see that the rat is straightened out, particularly if *rigor mortis* is present. The centre of the anus is taken as the junction of body and tail. Calipers may be used, but a steel tape is very convenient, and, considering the normal variations, sufficiently accurate. The curves of the body should not be followed. In measuring the hind foot the claws should be excluded. The ear should be measured from the external root of the conch. My own have been taken from the lower edge of the meatus.

Average Measurements in Centimetres.

	Length of head and body.	Length of Tail.	Length of Hind Foot.	Length of Ear.
M. alexandrinus	16	20	3·2	2 1
M. decumanus	22·6	20 2	4·1	1 97
N. bengalensis	18·2	14·8	3·2	1·94
N. nemorivagus	27	26	5·2	2·8

Relative Frequency.—Figures in this instance tend to be rather unsatisfactory owing to two causes. In the first place pressure of plague work made it impossible for me to make accurate recorded counts of any but a small proportion of the rats I examined. In the second place it was only late in my investigation that I could accurately distinguish the different varieties. My own recorded counts total 648. My colleague, Dr. Crake, counted 1,000, but only distinguished long-tailed from other rats, making the former 11·2 per cent.

Relative Frequency of Rats in Calcutta.

N. bengalensis.	M. decumanus.	M. alexandrinus.	N. nemorivagus.
60%	26%	14%	Rare

I have collected 9 specimens of Bandicoot, but these were out of a series of over 2,000 examined, and three of these were sent to me from other districts than my own.

The frequency of *N. bengalensis* is certainly overstated in the above table, and the explanation is that my most assiduous collector worked in a quarter where grain godowns abound. From observations in other districts, I should say that taken all over the city *Nesokia bengalensis* and *M. decumanus* are about equally frequent.

I have already generally indicated the reason for publishing this abstract. The preparation of the plates which are to accompany the full paper will take so long that it seems advisable not to wait indefinitely but to publish this rough summary at once in the hope that it may be of some use to those who are working at the connection between rats and plague.

25. *Notes on the Freshwater Fauna of India. No. V.—Some Animals found associated with* Spongilla carteri *in Calcutta.*—*By* N. Annandale, D.Sc., C.M.Z.S. (With one plate.)

Several Insects and Crustacea are known to live temporarily or permanently in the canals of *Ephydatia fluviatilis* in Europe; but very little has been published regarding the incolæ or commensals of the tropical Freshwater Sponges. During the past winter and spring I have examined in Calcutta a large number of specimens of the common *Spongilla carteri*, in order to discover what animals live in association with it. Such animals prove to be numerous and of very varied kinds. Several species, of which I have little to say, may be noticed briefly. A small fish of the genus *Gobius* (which I will describe later) lays its eggs in depressions on the surface of the Sponge towards the end of the cold weather, and several of the higher Crustacea [1] probably take shelter temporarily in the same position. To descend in the animal scale, I have found considerable numbers of at least one species of Planarian actually in the interior of the Sponge. These, however, I only found in this position after the rise in temperature, which heralds the commencement of the hot season, had caused the cells of the organism to perish, leaving, in many cases, a fairly coherent skeleton attached to the roots of floating water-plants which retained the gemmules in its meshwork. This skeleton also gave shelter to numerous Insect larva, which may have been an attraction to the Planarians, although most of them were too big to fall an easy prey to the latter. In Sponges of the species I have seen, at all times during winter and spring, minute Nematodes of the family Anguillulidæ, while in one, which I dissected in February, I found a larva of a Gordiid worm, lying close to the external surface in the substance of the Sponge. It was in its first stage, and its presence was probably connected with other inhabitants of its host; for larvæ of the kind are known to attack Chironomid larvæ, through the integument of which they make their way. In another specimen, at the beginning of April, I came across a worm of the genus *Dero*, which, although fully adult, was probably a chance guest also. It is evident that a loose, porous mass like the skeleton of *Spongilla carteri* offers an attractive retreat to any animal of sufficiently small girth and of retiring habits which may chance to find it.

There are several Insects and a Worm, however, whose connection with the Sponge is of a more settled though not a permanent nature. I will first deal with the Worm, of which a description follows.

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[1] Rai Bahadur R. B. Sanyal in his excellent little book *Hours with Nature* says that in some parts of Bengal Freshwater sponges are known as "shrimps' nets," because shrimps take shelter in them. The same naturalist tells me that a number of young snakes (*Cerberus rhyncops*) born in his aquarium in Calcutta, took shelter, the day after birth, in the natural canals of a sponge at the bottom of the tank.

Chætogaster spongillæ, sp. nov.

Diagnosis :—

A large sucker surrounding the mouth; no posterior sucker; segments few; body transparent, colourless; integument irregularly, transversely striated on the body, with longitudinal rows of minute, irregular tubercles on the "head"; chætæ short, feeble, retractile, arranged in 6 or 7 pairs of bundles along the ventral surface, with a narrow, flattened area between them, with 4 or 5 chætæ in each bundle, those of the second segment twice as long as the others; no chætæ on the 3rd-6th segments; total length of an individual which is not budding about 1 mm. Walls of pharynx comparatively thin; œsophagus as long as pharynx or longer, undivided, covered with glandular cells; intestine short. An otocyst in the "brain."

This Worm resembles *Chætogaster bengalensis* in the possession of the otocyst, which is a relatively large, globular, transparent cyst. It differs, however, from the species previously described from Calcutta in the comparatively thin walls of its pharynx, its undivided œsophagus, and the lack of a posterior sucker—the last a character which may be considered by authorities on the group to be of generic value. It is not improbable that both *Chætogaster bengalensis* and *Ch. spongillæ* will be finally separated from the European and American species of the genus under some new generic name or names: but their affinities are shown to lie with this genus by the following important characters:—(1) The double ventral nerve cord; (2) the discrete nature of the ganglia, the arrangement of which does not correspond with the segmentation of the body; (3) the absence of dorsal setæ and the arrangement of those on the ventral surface, which are present only on segment II and on the segments posterior to V; (4) the presence of uncinate setæ only.

In specimens of *Spongilla carteri* which had borne down the floating plants to which they were attached and had been partially smothered in the mud at the bottom of the pond, and in specimens of *Spongilla decipiens* which were already dying and producing large numbers of gemmules, I found *Chætogaster spongillæ* abundant during February. It frequented only those parts of the Sponge which had been killed or were dying, its food apparently consisting of the organic débris left by their decay. Many thousands of individuals were found in such parts of the sponge, while the healthy, growing parts were quite free of them

Lately (April, 1906) I have found *Chætogaster spongillæ*, still sexually immature, on the external surface of colonies of *Plumatella repens* var. *emarginata*, which were growing on submerged stones and water-plants in a pond in the Calcutta Zoological Gardens. Accompanying it were Naidomorph worms[1] of several genera, (including *Dero*, *Pristina* and *Pterostylarides*), numerous Rotifers, and also a third species which must be placed provision-

[1] For descriptions and figures of many of the Indian species of this family see A. G. Bourne, in *Quart. Journ. Micr. Sci.* XXXII, 1891, p. 335.

ally in the genus *Chætogaster*. The last (Fig. 1B) is remarkable for possessing in the brain a sensory organ which is densely pigmented and probably functions as an eye. The buccal cavity in this species is very deep, the muscular pharynx short; the total length is from 2 to 3 mm., and there are not more than eight pairs of setigerous bundles, the setæ resembling those of *Chætogaster bengalensis* in arrangement, but being fewer in each bundle. Except those just behind the mouth, they are not retractile The vascular plexus is better developed than in the two other forms I have examined, and extends forwards to the base of the buccal cavity. There is no nephridium near the second bundle, but that which opens at the base of the third bundle is larger than those posterior to it. Although the sexual organs are quite immature, the clitellum is well developed.

The food of this form with an eye consists, at any rate in part, of the Protozoa (*Vorticella*, *Epistylis*, *Stentor*, etc.) which are abundant on the surface of the zoarium of the Polyzoon. The worm hooks it-elf along with the aid of its setæ, the first bundle playing no part in progression but being used to seize and retain living prey The ventral surface is closely applied to some more or less flat surface during progression, and the movements, in spite of the existence and use of the setæ, recall those of a Planarian. Unlike the species which attaches itself to snails in the Calcutta "tanks"—I have not been able to find specimens this winter—this Eyed Chætogaster can progress through the water without support, by lateral and vertical contortions of its body; but it prefers as a rule to crawl.

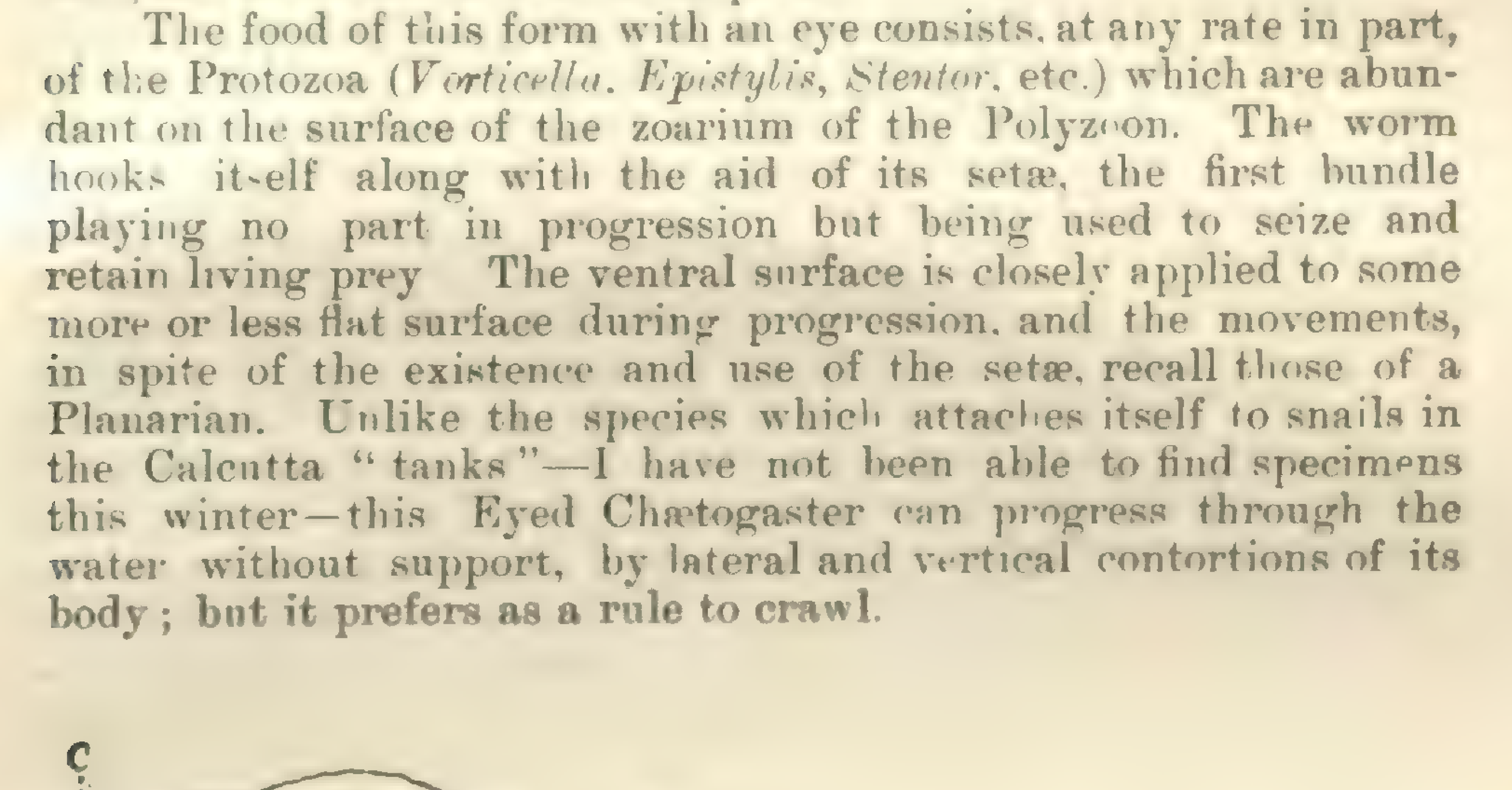

FIG. 1. Two species of *Chætogaster* from *Plumatella*. April.
A = *Ch. spongilla*. B = *Ch.*, sp. (Both × about 35.)
B = bud. C = clitellum; *e* = eye; *o* = otocyst. Both specimens are in a state of contraction.

Spongilla carteri produces comparatively few gemmules in Calcutta, where the Freshwater Sponges are not desicated during the hot weather as they are in Bombay but apparently perish owing to the rise in temperature which takes place at the end of March or the beginning of April. Moreover, these few gemmules are formed chiefly towards the interior of the Sponge, which may reach a diameter of at least six inches, and are mostly retained in the meshwork of the skeleton and germinate *in situ* on the return of cooler weather. A few, however, are set free and serve to aid in the dispersal of the species. I found gemmules of this form fairly abundant on the surface of a marsh in Chota Nagpur at the beginning of March, and they may occasionally be taken among the bacterial scum which appears on the water of the Calcutta "tanks" a little later in the year. A large proportion of the gemmules of *Spongilla decipiens* are, on the other hand, produced, so to speak, for dispersal. The Sponge is a thin, incrusting form, which becomes full of gemmules, and the gemmules are packed together in masses of a peculiar pneumatic tissue which gives them *very* great buoyancy. I have no doubt that *Chætogaster spongillæ* (which I have only found in half-dead sponges in an unfavourable position for the germination of the gemmules) plays an important part in liberating the gemmules of both species, both by eating the débris which retains them in position, and by its movements as it crawls along the skeleton. Its mode of progression differs from that of *Chætogaster bengalensis* and consists mainly in wriggling movements of the body assisted by the retractile chætæ, which, owing to their fineness, are well adapted for grappling with the spicules of the Sponge. A large number of living organisms, however minute, moving in this way must aid in dislodging freely movable bodies such as gemmules in the meshwork of a Sponge skeleton.

Chætogaster spongillæ reproduces its kind prolifically by budding and subsequent fission; but I have not found individuals which were sexually mature, notwithstanding the fact that the clitellum, as in *Chætogaster bengalensis*, is already visible in young individuals newly separated from a budding parent. There seems to be a tendency, however, for the latter species to desert its host at the beginning of the hot weather, and it is not improbable that it becomes sexually mature after doing so, and deposits eggs at the bottom which lie dormant until the temperature sinks again. The clitellum becomes more conspicuous at the end of winter; but I have not been able to detect the gonads even in specimens in which this change had occurred.

The Insects which inhabit *Spongilla carteri* belong to several species; but as they are all immature I cannot venture on specific determinations. The most numerous belong to the Dipterous family of Chironomidæ or Midges.

Chironomus sp. (larva).

One type of larva (possibly including several allied species)

commonly found in the Sponge agrees in almost all respects with the larvæ of European Midges of the genus *Chironomus*. This type (Fig. 1 B) has an elongated body with the segments approximately similar *inter se*. The head, which is small, is hard and of a brownish colour. There are two eyes, the lower of which is double, on each side, and a short tentacle which is not retractile. The jaws, which are formed for biting, and the other mouth-parts exactly resemble those of European species. On the first segment of the body there is a pair of extremely short, stout, separate appendages, which are furnished at their free extremity with a bundle of coarse, curved spines. A somewhat similar, but longer pair of appendages occurs at the other extremity of the body, and behind them, at the very tip of the abdomen, is a pair of blunt, sack-like processes with a small bunch of hairs on a slight projection at their common base above. The last abdominal segment also bears on the dorsal surface (in some cases on a hump or prominence) a bunch of much thicker and longer bristles, which are connected with a special muscle. A few fine, scattered hairs occur on the sides of the body. There are no processes on the ventral surface of the abdomen. (The last is a feature in which almost all the larvæ of *Chironomus* I have examined in India differ from those of the European species, in which these ventral processes are conspicuous.) This sponge-haunting *Chironomus* larva differs from the one which feeds on *Hydra* in at least four points: (1) in the extreme shortness of the anterior limbs; (2) in the structure of the eyes, of which there is a single pair in the former; (3) in being considerably larger; and (4) in colour. Whereas the free-living species is nearly colourless, that of the form at present under consideration is of a deep blood-red hue. This colour, which is developed fully only in older individuals, has been shown to be due in other larvæ of the genus not to the presence of ordinary pigment but to the production of hæmoglobin, by means of which the larva breathes, its respiratory system being altogether rudimentary. The smaller size of the free-living species may render a highly specialized device for oxygenating the blood unnecessary.

As I have said, I am not sure that several closely allied species of *Chironomus* larvæ do not haunt the Sponge; but even if this is the case, they are as similar in their habits as in their structure, and they may be regarded from the standpoint of bionomics as a single form. In many cases it is evident that they and the Sponge grow up together, and large numbers of them may be found in the substance of their host at all times during winter and spring. The evil odour of the Sponge is apparently not offensive to them, and they are rather more numerous in the living Sponge, which has this odour, than in the dead skeleton from which the smell has departed. As young larvæ, they build short protecting tubes of a parchment-like substance, which is secreted by their salivary glands. It appears, unlike the threads of which the tube of the common European *Chironomus* larvæ is made, to be given out in an amorphous condition, and is probably moulded into shape by

the larva. The Sponge grows very rapidly and the larva is soon in danger of being engulphed in its substance. The tube is therefore lengthened, in order to avoid this catastrophe and to secure communication with the exterior. The process may continue until the tube is over an inch in length, its diameter increasing with the growth of its maker. The internal aperture becomes practically closed by the pressure of the growing substance of the Sponge, but the external orifice remains open. Very often the Sponge dies before the larva has reached the term of its larval life; but this appears to make no difference to the latter, which lives on in its tube. The entrance to the tube may project some little distance beyond the worn surface of the larva's dead host

The larva does not eat the Sponge but feeds on minute animals which it catches by means of the curved bristles on its anterior limbs In capturing its prey it stretches the fore part of its body out of the entrance of its tube, to the interior of which it clings by means of its hind limbs and of the bristles at the posterior extremity of the abdomen. The tube is covered with scattered spicules of the Sponge; but I have been unable to ascertain whether the larva fastens them there or whether they belong to the substance of the host. Their clean condition, as they are apparently free from living cells or the remains of dead ones, would suggest that the larva plucks them out from the sponge and fixes them in position; but the tube is in extremely intimate contact with the substance of the sponge, and can with difficulty be separated from it.

At first sight it would appear that the presence of a foreign body such as the tube of this *Chironomus* larva in the interior of a living organism would be necessarily harmful to that organism; but the fact that a Sponge has no definite organs or living tissues renders a theory of the kind improbable. Study of the facts shows that the tubes of the larva are, on the contrary, distinctly beneficial to the Sponge, especially when they are present in considerable numbers. *Spongilla carteri* is very fragile in life, but, as has been noted above, the skeleton of specimens which have not grown sufficiently large [1] to bear down the plants that support them, remains coherent after the death of the cells of the Sponge, serving as a nest for the gemmules which it retains. The tubes of the *Chironomus* larva aid very greatly in preserving this coherence by binding the skeleton together, as the substance out of which they are formed is tough and persistent. The larva, therefore, would appear to be beneficial to the Sponge in a way very different from that in which *Chætogaster spongillæ* aids in maintaining the survival of the species; but whereas the latter has only been found in Sponges which had sunk to the bottom, the former occurs chiefly in those which are floating near the surface.

The larva does not pupate in the Sponge.

Col. Alcock [2] has drawn my attention to certain instances of

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[1] Sometimes they sink not because of their own weight but because the leaves of the supporting plants are eaten by insects.

[2] See Alcock in *Ann Mag. Nat. Hist.* (6) X. 1892, p. 208.

commensalism between marine Sponges and Hydrozoa, which are to some extent parallel to this between a tubicolous larva and *Spongilla carteri*, the chitinous exoskeleton of the Coelenterates playing, however, a far more important part in the formation of the sponge body than do the tubes of the Chironomid. The case of the latter and its host should perhaps be described as one of incipient commensalism. The considerable variation noted in the habits of allied Indian larvæ would support this view. A very similar larva forms its tube indifferently either in the substance of a brackish-water Sponge or among the densely packed zoœcia of a Polyzoon; a third is common on the external surface of the zoarium of *Plumatella repens*, covering its tube with sand-grains; while a fourth lives independently and fastens to its retreat Protozoa and other small animals on which it feeds. The habits of all these species tend, in greater or less degree, towards commensalism, and probably the one at present under consideration has gone further than the others in this respect.

Tanypus sp. (larva).

Another Chironomid larva (Fig. 2B) commonly found in the substance of *Spongilla carteri* so closely resembles those of the European members of the genus *Tanypus* that I think there can be little doubt that this is the genus to which it belongs. It differs from the larva of *Chironomus* in the following characters: (1) the head, instead of being subspherical in shape is long, rather narrow, and flattened above, having a somewhat "snaky" appearance; (2) the antennæ can be completely retracted into cavities in the side of the head; (3) the fore limbs are joined together at the base for a considerable proportion of their length; (4) both they and the hind limbs can be entirely retracted, the latter being withdrawn into separate sheaths while the fore limbs disappear into a common tube which depends from the ventral surface of the first segment of the body some little distance behind the head. The claws attached to the hind limbs are large in this sponge-haunting form, which I have found both in winter and in spring, and there is a single, undivided eye on each side. This larva does not form a tube but forces its way through the substance of the Sponge, pulling itself along by means of its conjoined fore limbs. When alarmed it withdraws its limbs and antennæ into their cases and remains still, as if it were dead Probably it does not feed on the Sponge, but, like its ally found in the same organism, on minute animals which it catches by means of the hooks on its fore limbs. This form is commoner in dead Sponges than is the *Chironomus*, and I have taken a species probably identical with it living free among water-weeds. It is colourless and apparently breathes by transmission of oxygen through the general surface of its body, which is covered with a fine, soft integument It does not grow so big as the *Chironomus* larva. I have sometimes found a considerable number of

individuals close together in a natural cavity of the Sponge. The pupa lives free in the water.

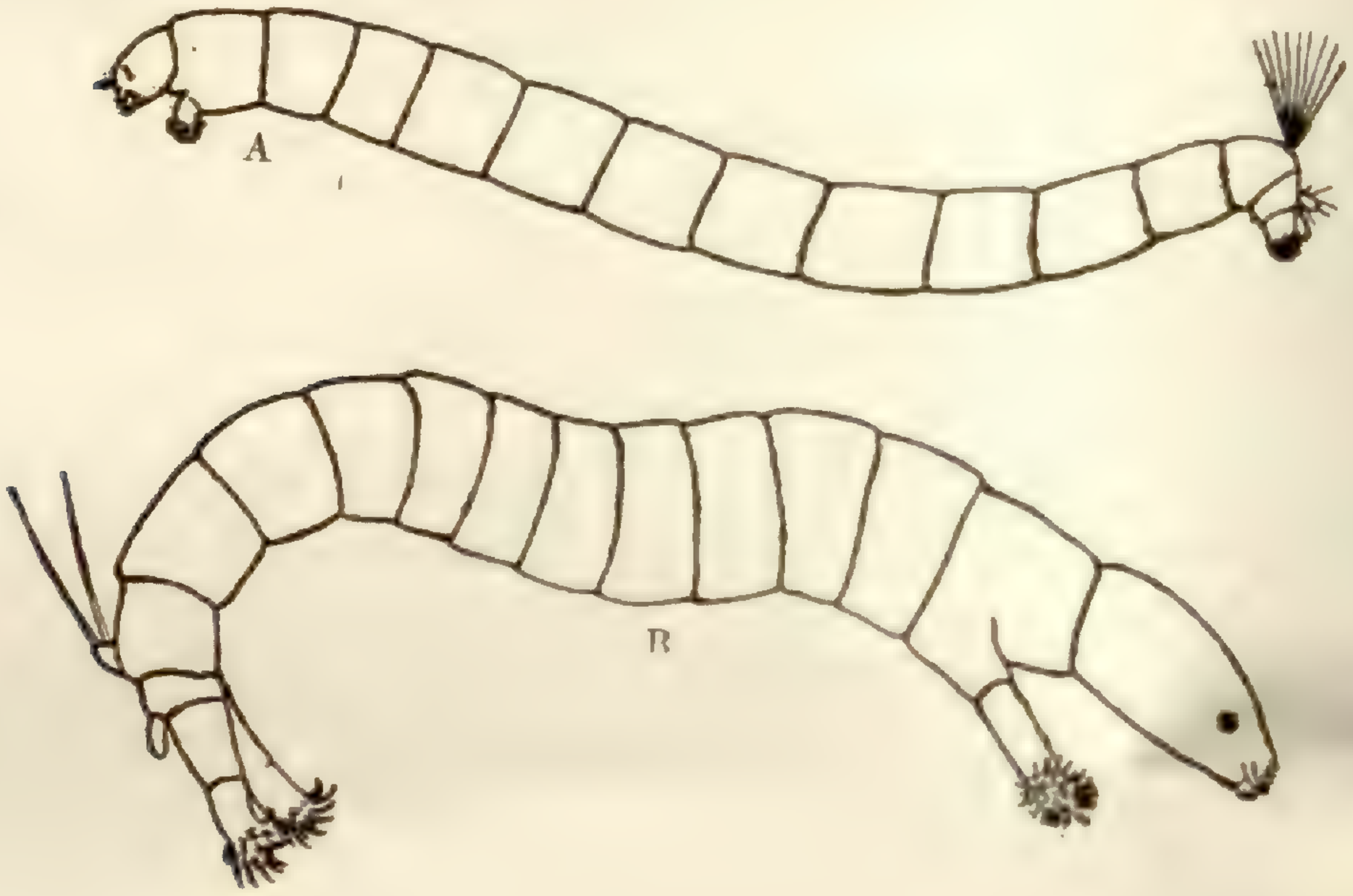

FIG. 2. Chironomid Larvæ from *S. carteri*.
A = *Chironmus* sp., × 10. B = *Tanypus* sp., × 20.

A small Beetle larva (Pl. I, Fig. 3) occurs somewhat sparingly in the Sponge, both in winter and in spring. Its mouth-parts prove that it is a predaceous form; but I have been unable to identify it. A remarkable feature is the forked appendage at the extremity of the abdomen. This structure is jointed and bears at the extremity of each of its two branches a powerful hooked claw. The object of the claw is to enable the larva to cling tightly to any object, and the end of the abdomen is generally bent beneath the rest of the body like the "tail" of a lobster. If the larva is dislodged, however, it straightens itself and moves along by means of its legs, with a curious jerky gait. I have usually found it near the centre or the base of the Sponge.

SISYRA sp. (larva). Pl. I, Fig. 2.

One of the most interesting Insects found in the Sponge is a Neuropterous larva very closely resembling that of the European *Sisyra fuscata*, which is found during summer in the canals of *Ephydatia fluviatilis*. Indeed, I cannot find any definite character whereby the Indian form could be distinguished from the European; but possibly the eyes are better developed in the former. The Indian larva is a small, whitish insect with a flattened, almost triangular abdomen and a comparatively narrow thorax and head. The abdomen, as in the European form, bears on its ventral surface seven pairs of jointed appendages which apparently function as gills. There is a pair of very fine, stiff,

bristle-like antennæ on the head, and the eyes are large and dark. Each consists of a number of simple ocelli situated close together on a small circular area. The mouth-parts resemble those of the European form, but may differ slightly in details. They consist of a pair of tubular structures which closely resemble the antennæ in outward appearance, except that they are not jointed. Each is really double. Their function is evidently to obtain nourishment by suction; but it is not known whether the European form feeds on the Sponge or on other animals or plants, and I have no observations on this point to offer as regards the Indian larva.

I have only found this larva during the winter months. Unlike its European congener, it is not confined to the natural cavities of the Sponge; for it forces its way into the actual substance of its host.

Its occurrence during summer in Europe and in winter in the tropics, is what might be expected from the analogy of other forms in the "tank" fauna. In Europe winter is the time of hardship for aquatic animals, owing to scarcity of food and the formation of ice; whereas in Calcutta the high temperature to which water, and especially shallow, stagnant water, rises during the hot season, appears to be inimical to most forms of animal life, while life flourishes in the comparatively, but not actually cold water of the cool season. In Calcutta few of the "tanks" dry up at any time of the year; but the fact that they do so in many parts of the warmer regions of the world may have had an effect on the history of the pond fauna of a district geologically so recent as Lower Bengal. Regarded from a geological standpoint, the animals of this part of the country are, without exception, recent immigrants, and we find that some characteristic representatives of even the Indian terrestrial fauna (*e.g.*, *Chamæleon calcaratus* and *Sitana ponticeriana*) have never managed to establish themselves in the Ganges delta. Aquatic animals can usually adapt themselves to changed conditions, as we see by comparing the fauna of a Calcutta "tank" and that of a British pond and noting the many resemblances and identities; but changes are brought about very gradually unless they are of essential importance to the well-being of an organism, and it is not improbable that the crisis which takes place in the life cycle of so many of the animals of the Calcutta "tanks" towards the end of March, is not due solely to the actual rise in temperature which then occurs, but also in part to an inherited rhythmical tendency which protected the ancestors of these organisms from perishing in a climate in which the extremes of moisture and dryness were more widely separated than they are in Lower Bengal.

Summary.

At least two species of Dipterous larvæ, a Beetle larva, a Neuropterous larva of the genus *Sisyra*, and a Worm probably belonging to the genus *Chætogaster*, occur in the substance of

living specimens of *Spongilla carteri* in Calcutta, while several other animals seek shelter in the dead skeleton of the Sponge. The Worm appears to be beneficial to its host in that it assists in the dispersal of the gemmules, while one of the Dipterous larvæ strengthens the skeleton of the Sponge by building tough and persistent tubes in the substance of its host.

Explanation of Plate I.

Fig. 1.—Vertical section of a specimen of *Spongilla carteri* which has sunk to the bottom. The upper, lighter portion was living, the lower, dark part practically dead. February 6th. (Natural size).
G = gemmule. T = tube of *Chironomus* larva. R = rootlet of plant to which the Sponge was attached.

Fig. 2.—An undetermined Beetle larva from *Spongilla carteri*, × 10.

Fig. 3.—Ventral surface of larva of *Sisyra* sp., from *Spongilla carteri*, × 10.

All the figures are from specimens preserved in formaline.

26. *Notes on the Freshwater Fauna of India. No. VI.—The Life-History of an Aquatic Weevil.*—By N. Annandale and C. A. Paiva.

So far as we are aware, no member of the family Curculionidæ has been recorded as an aquatic Insect In the autumn of 1905, however, one of us found a few specimens of a small Weevil among water-weeds in the Museum "tank" in Calcutta. At the beginning of March, 1906, another, considerably smaller species was noted under similar conditions in Chota Nagpur; but unfortunately all the specimens obtained were accidently destroyed. In the same month, especially towards the latter half, the Calcutta species was abundant, and we are now able to give a general account of its life history, which is surprisingly similar to that of many terrestrial forms.

Although we do not propose to attempt a generic identification of this Weevil, it will be well to commence with a description of the species.

Description of an Aquatic Weevil.

The antennæ are elbowed and the basal joint fits into a groove on the surface of the rostrum They are inserted at a point a little distal of the middle of the rostrum, than which they are longer. The first joint is equal in length to the sum of the remaining joints; the distal joint is flattened and expanded. The rostrum is stout, slightly curved, and approximately equal in length to the head and pronotum together. The head is small and deflexed, its base being covered by the anterior border of the pronotum. The eyes are small and rounded, and are situated on the sides of the head, at the base of the rostrum. The prothorax has the lateral margins rounded. The elytra are truncate proximally, pointed apically, with two blunt tubercles on each, one near the base and one a little distance from the apex; they cover the abdomen entirely and are very convex outwards. The coxæ are subconical and prominent, the anterior pair being contiguous, the intermediate pair slightly and the posterior pair very widely separated from one another. The femora are incrassate from a little beyond the middle point to the apex; the tibiae are long, slender, curved towards the apex, ending in a sharp claw; the tarsi are 4-jointed, and each joint is clothed below with a tuft of fine, white hairs. The head, thorax and elytra are finely punctured, the sides of the pronotum being also vertically, sinuately striated, and the elytra deeply grooved longitudinally.

	♂	♀
Total length ...	4 mm.	5 mm.
Breadth of thorax ...	0.75 „	1 „
Length of rostrum ...	1 „	1.5 „

Colour.—Silvery grey; eyes black, rostrum piceous; antennæ, tarsi, tibiae and base of femora ferruginous, the antennæ rather darker than any part of the limbs.

Habits.

The adults feed on the floating leaves of *Limnanthemum.* They also eat the stems of the same plant, crawling down them into the water. Their bodies are lighter than water and consequently rise to the surface if dislodged. Their powers of swimming are feeble and their movements on the surface are directed solely to securing hold of the nearest leaf or other floating object Under water each antenna carries a bubble of air. which may be useful, as Miall [1] suggests, in the case of certain true Water Beetles, in enabling these organs to perform their delicate sensory functions. The dorsal surface of the abdomen is flat, leaving an empty space beneath the convex elytra, the edges of which fit very closely to the lateral margins of the dorsal surface of the abdomen. The wings are closely applied to the elytra above. The space thus formed is filled with air. The beetle may sometimes be seen holding on to the edge of a *Limnanthemum* leaf, with the tip of the abdomen out of the water. Doubtless it is taking in fresh air into this space ; but the spiracles are not in any way modified to assist in the operation. Bubbles of air are not set free under water.

The sexes couple on the upper surface of the *Limnanthemum* leaves in March. Union lasts for some hours, and then the male goes off in search of a fresh mate. The female descends beneath the surface, clinging to a stem. At intervals she bites small funnels in the substance of the stem, and in some of these she deposits eggs, one egg in each funnel. We have not found more than one egg in each stem in the "tank," but captive females sometimes lay several in a stem. The egg is elongated and rounded at both ends. It measures about 0·8 mm. in length, and 0·3 mm. in tranverse diameter. The female has no ovipositor, but the posterior extremity of her abdomen is slightly tubular in shape. She pushes the egg along under the bark so that it lies with its major axis parallel to the external surface of the stem. The young larva is of a dark reddish-brown colour owing to its large salivary glands, which are of this colour, showing through the transparent skin. It is rather more slender than some Weevil larvæ but otherwise normal. The eye is small and very inconspicuous. There is a black spot on the last segment of the abdomen. The respiratory system is similar in all respects to that of a terrestrial species. Indeed, there is no necessity for any structural adaptation for life inside the stem, which is naturally full of air, its tissues, like those of the stems of many water-plants, containing closed spaces which render it buoyant. What has occurred is a modification of instinct which has allowed the Beetle to make use of the air-spaces in the plant; but this modification of instinct has not been accompanied, as it has in the case of the larva of the European *Donacia crassipes*,[2] by the development of a special organ for piercing the walls of the air-spaces. The larva eats away these walls with its jaws, as it forms the larger cavity in which it lives, and so is well supplied with air by the same action which gives it nourishment.

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[1] *Nat. Hist. Aquatic Insects*, p. 34. [2] *id., op. cit.*, p. 95.

Immediately after emerging, the larva begins to eat, moving through the stem either upwards or downwards as chance may direct it. By feeding on the tissues of the stem it soon forms a vertical tunnel, which increases in width as it does. This tunnel reaches the length of about an inch and half, but behind the larva it is filled with excreta. The tunnel in which the egg was laid disappears with the growth of the plant.

After undergoing several ecdyses the larva becomes of a

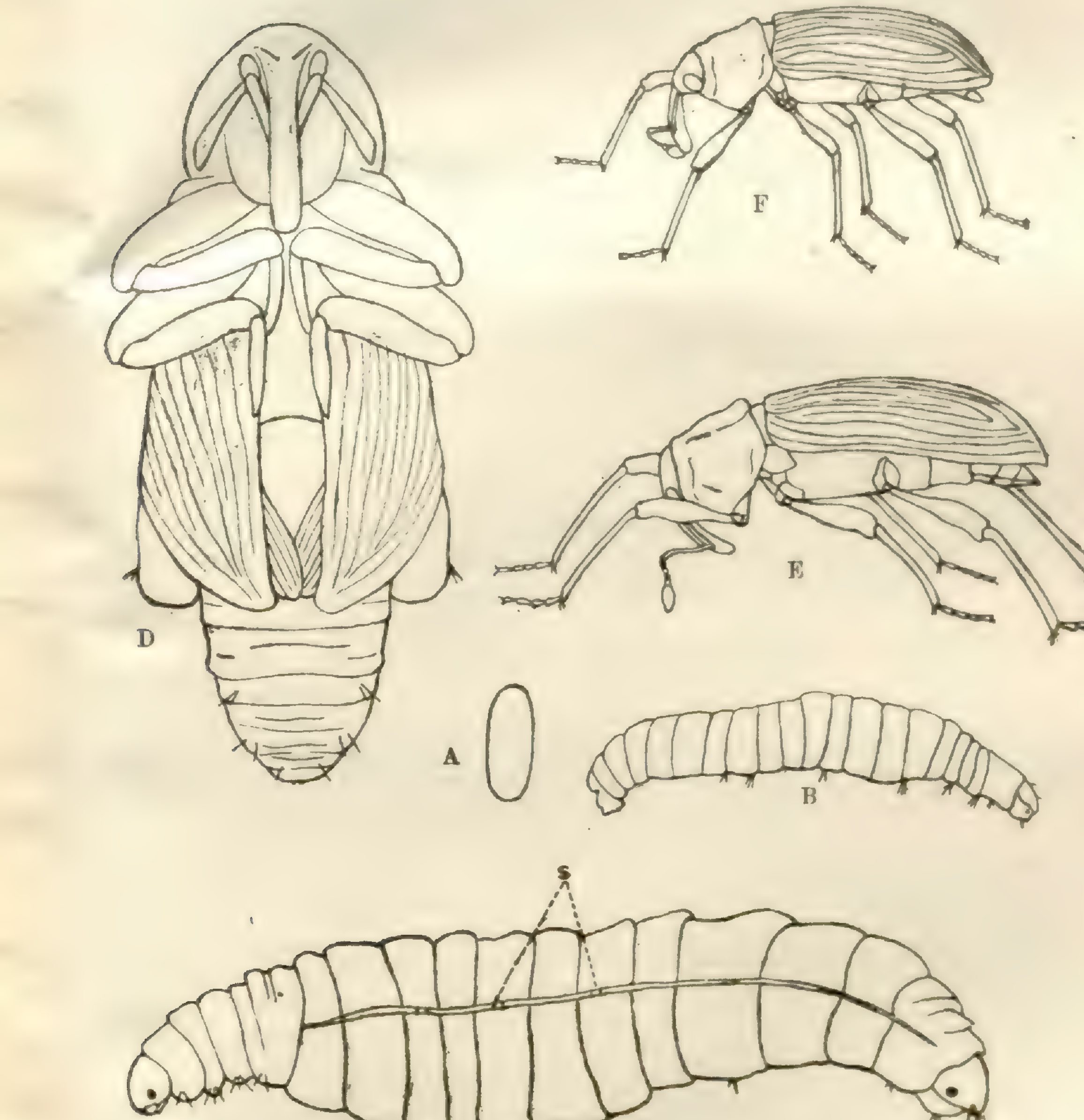

FIG. 1. The Metamorphosis of an Aquatic Weevil.

A = egg (× 16). B = young larva, probably in its second instar (× 16) C = adult larva (× 16), s—spiracles. D = pupa (× 16). E = adult female (× 8). F = adult male (× 8). A-D from specimens preserved in formaline ; E and F from dried specimens.

pinkish colour, owing to an accumulation of fat which conceals the salivary glands. At this stage it is about 6 mm. long. Its girth is now sufficiently great to affect that of the stem in which it lives, and the latter bulges out round the chamber in which it pupates. The pupa is perfectly normal. It lies in the stem with its ventral surface directed towards the thinnest wall of the stem, and through this the adult eats its way.

Although many eggs were laid in our aquarium, we have been unable to watch the metamorphosis, as the ova of a captive specimen did not develop. The foregoing notes are therefore derived chiefly from observations on a large number of infected *Limnanthemum* plants brought from the Museum "tank" and examined fresh.

We have found both Chironomid larvæ and Planarians in the tunnels made by the Weevil, but are unable to say whether they had entered the tunnels merely for the sake of shelter or to feed on the proper occupants.

27. *Notes on the Freshwater Fauna of India. No. VII.—A new Goby from Fresh and Brackish Water in Lower Bengal.*—By N. Annandale, D.Sc., C.M.Z.S.

The Fish described in this note was obtained in large numbers at Port Canning (Lower Bengal) in January, and has recently been taken in Calcutta. I have to thank Col. A. W. Alcock for much assistance in its determination and description.

Gobius alcockii, sp. nov.

Diagnosis :—

D 5 $\frac{1}{6\text{-}7}$. A $\frac{1}{7}$. L. lat. 26 to 28. L. trans. 9. Body compressed, moderately elongate; the height 6 times in the total length including caudal fin. Length of head $3\frac{3}{5}$ times in total length including caudal fin; diameter of eye greater than length of snout, less than interorbital breadth; eyes large, feebly protuberant; cleft of mouth small, oblique; several rows of teeth in both jaws, canines well developed; snout obtuse, rounded. Two rows of tubercles below the mouth on each side and a less distinct Λ-*shaped* series on the lower proximal part of the cheek. Dorsal fins well separated, barely as high as body, their spines without filamentous prolongations; tail fin rounded. Scales relatively large, conspicuously ctenoid. *Colour* white (in life translucent), with two broad, black, vertical bars on the head and four or five on the body; the top of the head suffused with black or wholly black; the dark markings produced by an aggregation of relatively large, star-shaped pigment-cells which are separated more or less distinctly from one another.

Length of a spawning female (the largest individual seen)—16 mm.

The most remarkable points about this little Fish are its small size and its juvenile appearance, which has evidently caused it to be passed over undescribed. At least one other species of the same family, the Philippine *Mistichthys luzonensis* (which is said to be the smallest known vertebrate) is as small.

The specimens taken at Port Canning were netted among weeds overgrown with Polyzoa and Sponges (*Spongilla lacustris* var. *bengalensis*) in brackish pools; while the one collected in Calcutta was found among the roots of a plant of *Pistia stratiotes* from a "tank" in the Zoological Gardens at Alipur. This specimen was engaged in spawning. The eggs, which were rather large for the size of the parent, measured 0·9 mm., by 0·9 mm., by 1 mm., and were somewhat irregular and variable in outline, the majority having a more or less pear-like form. They were attached to rootlets near the centre of the bunch, surrounding a cavity such as is often produced in *Pistia stratiotes* by some of the roots decaying and falling away after being attacked by Insects. The female, whose fin membranes were much torn, died on the day following her capture, and ova were seen issuing from her body. Judging

from the size and appearance of the eggs, I have little doubt that *Gobius alcockii* is the Fish which also spawns in depressions on the surface of *Spongilla carteri*.

FIG. 1. *Gobius alcockii* (× 9).
With a lateral scale (highly magnified)

2×10.

3×10

1.

A.C Chowdhary del & Lith

PRINCIPAL PUBLICATIONS OF THE SOCIETY.

Asiatic Researches, Vols. I—XX and Index, 1788—1839.
Proceedings, 1865—1904, (now amalgamated with Journal),
Memoirs, Vol. 1, *etc.*, 1905, *etc.*
Journal, Vols. 1—73, 1832—1904.
Journal and Proceedings, [*N. S.*] Vol. 1, *etc.*, 1905, *etc.*
Centenary Review, 1784—1883.
Bibliotheca Indica, 1848, *etc.*

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(*a*) To be present and vote at all General Meetings, which are held on the first Wednesday in each month except in September and October.

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(*f*) To receive *gratis*, copies of the *Journal and Proceedings* and *Memoirs* of the Society.

(*g*) To fill any office in the Society on being duly elected thereto.

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June, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 6th June, 1906, at 9-15 P.M.

MAJOR F. P. MAYNARD, I.M.S., in the chair.

The following members were present :—

Dr. N. Annandale, Mr. I. H. Burkill, Mr. J. A. Chapman, Mr. L. L. Fermor, Rev. E. Francotte, S.J., Mr. H. G. Graves, Mr. D. Hooper, Dr. M. M. Masoom, Captain J. W. Megaw, I.M.S., Mr. R. D. Mehta, Lt.-Col. D. C. Phillott, Major L. Rogers, I.M.S., Mr. R. R. Simpson, Major J. C. Vaughan, I.M.S., Mr. E. Vredenburg.

Visitors :—Rev. G. W. Olver, Mr. W. W. R. Prentice.

The minutes of the last meeting were read and confirmed.

Forty-two presentations were announced.

The General Secretary announced that Major-General M. G. Clerk, Lt.-Col. D. S. E. Bain, I.M.S., Mr. F. P. Dixon, and Lt.-Col. A. Alcock, F.R.S., had expressed a wish to withdraw from the Society.

The proposed creation of a Medical Section in the Society, of which intimation had already been given by circular to all members, was brought up for final disposal. The votes of the members were laid on the table, and the Chairman requested any Resident Members, who had not expressed their opinion, to take the present opportunity of filling in voting papers. Two such papers were filled in, and with the 80 returned by members were scrutinized. The Chairman appointed Messrs. L. L. Fermor and E. Vredenburg to be scrutineers. The scrutineers reported as follow :—For 73. Against 9.

Carried.

Panedya Umapati Datta Sharma, Principal, Sree Visuddhanand Saraswati Vidyalaya, proposed by Lt.-Col. D. C. Phillott, seconded by Mahamahopadhyaya Haraprasad Shastri ; Kumar Manmatha Nath Mitra, Zemindar, Calcutta, proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Babu Panchanan Mukhopadhyaya ; Sri Surendra P. Sanyal, Private Secretary to Raja Bahadur, Majhauli, U.P., proposed by Mahamahopadhyaya Haraprasad Shastri, seconded by Lt.-Col. D. C. Phillott ; and Mr. C. C. Young, Engineer, East Indian Railway, proposed by Major L. Rogers, I.M.S., seconded by Dr. W. C. Hossack ; were ballotted for and elected Ordinary Members.

Mr. L. L. Fermor exhibited some Indian stony meteorites recently acquired for the Geological Museum.

They were as follows :—

(1) Two aerolites, weighing 1574·35 and 1000·6 grammes, respectively, which fell on 29th October, 1905, at Bholgháti, Morbhanj

State, Bengal. (The larger stone is the property of the Morbhanj Museum). They were seen to fall in the daytime when the sky was clear, and the observer distinctly states that they were not luminous.

(2) Two portions of an aerolite, weighing, respectively, about 14,700 grammes, and 3086·6 grammes, which fell on the 27th April, 1905, at Karkh, Jhalawán, Balúchistán This fall took place in the daytime when the sky was clear, and was first noticed as a meteor or fire-ball having a tail of smoke. The larger specimen shows beautiful pittings and flow markings on the crust.

(3) An aerolite weighing 1078·8 grammes which fell, it is said, during a thunderstorm, in August or September, 1878, near Haraiya, Basti district, U.P. This meteorite is notable on account of its crust which shows delicate linear ridges radiating from the middle of one side of the stone. These ridges were produced by the action of the air on the fused exterior of the meteorite as it sped rapidly through the atmosphere; they enable one to orientate the stone with regard to its line of flight.

The following papers were read:—

1. *Note on a rare Indo-Pacific Barnacle.*—*By* N. Annandale, D.Sc., C.M.Z.S.

2. *Contributions to Oriental Herpetology. No. IV.*—*Notes on the Indian Tortoises.*—*By* N. Annandale, D.Sc., C.M.Z.S.

3. *Rawāts and Merāts of Rajputana.*—*By* R. C. Bramley. *Communicated by* Mr. R. Burn.

4. *An old reference to the Bhotias.*—*By* H. Beveridge, I.C.S. (retired).

5. *The Common Hydra of Bengal; its systematic Position and Life History.*—*By* N. Annandale, D.Sc., C.M.Z.S.

This paper will be published in the *Memoirs*.

6. *Revenue Regulations of Aurangzib (with the Persian Texts of unique Farmāns from a Berlin Manuscript.)*—*By* Jadu Nath Sarkar, M.A.

7. *The Dārds at Khalātse in Western Tibet.*—*By* Rev. A. H. Francke.

This paper will be published in the *Memoirs*.

8. *Parasites from the Gharial* (Gavialis gangeticus, *Geoffr.*)—*By* Dr. von Linstow, *Gœttingen. Communicated by* Dr. Annandale.

This paper will be published in a subsequent issue of the *Journal and Proceedings*.

9. *Shāista Khān in Bengal*, 1664–66.—*By* Jadu Nath Sarkar, M.A.

10. *Some current Persian Tales told by Professional Story-Tellers.*—*By* Lieut.-Col. D. C. Phillott, *Secretary, Board of Examiners, Calcutta.*

This paper will be published in the *Memoirs*.

Library.

The following new books have been added to the Library during May 1906 :—

Ahern, George P. A Compilation of notes on India-Rubber and Gutta-Percha. *Manila*, 1906. 8°.

Department of the Interior, Bureau of Forestry. Bulletin, No. 3.

Presd. by the Bureau.

Annandale, N. Preliminary Report on the Indian Stalked Barnacles. [*London*, 1906.] 8°.

From the Annals and Magazine of Natural History, 1905.

Presd. by the Author.

Australian Museum.—*Sydney.* Nests and Eggs of Birds found breeding in Australia and Tasmania. By A. J. North. Vol. I, *etc.* *Sydney*, 1904, *etc.* 4°.

Presd. by the Museum.

British Museum.—*Natural History.* Catalogue of the Fossil Plants of the Glossopteris Flora in the Department of Geology...By E. A. N. Arber. *London*, 1905. 8°.

Presd. by the Museum.

Cabaton Antoine. Les Chams de l'Indo-Chine. *Paris*, 1905. 8°

Extrait de la Revue Coloniale.

Dinkard. The Pahlavi Dinkard. Book VII. Lithographed by Manockji Rustamji Unvala. *Bombay*, 1904. 4°.

Presd. by the Trustees of the Parsee Punchayet Funds and Properties, Bombay.

Ferguson, John. Bibliotheca Chemica : a catalogue of the alchemical, chemical and pharmaceutical books in the collection of the late James Young of Kelly and Durris. 2 vols. *Glasgow*, 1906. 8°.

Presd. by the Trustees to the Family of the Late James Young.

Foster, William. The Journal of John Jourdain, 1608-1617, describing his experiences in Arabia, India and the Malay Archipelago. *Cambridge*, 1905. 8°.

Hakluyt Society's Publications, Second Series, No. XVI.

Presd. by the Govt. of India, Home Dept.

Frazer, J. G. Lectures on the Early History of the Kingship.
London, 1905. 8°.

Haas, W. R. Tromp de. Uitkomsten van de in 1905 verrichte aftappingsproeven met Hevea Brasiliensis in den Cultuurtuin te Tjikemeuh verkregen. [*Batavia*, 1906.] 8°.

Jong, Dr. A. W. K. de. De Verandering van het alkaloïd der Cocabladeren met den ouderdom van het Blad.
[*Batavia*, 1906.] 8°.

Presd. by the Botanic Institute of Buitenzorg.

Kern, H. Gedenkteekenen der oude indische Beschaving in Kambodja. [*Batavia*, 1904.] 8°.

Overdruk uit Onze Eeuw, 1904.

Presd. by the Author.

Macdonald, George. Coin Types. Their origin and development. Being the Rhind lectures for 1904...With...plates.
Glasgow, 1905. 8°.

Margoliouth, D. S. Mohammed and the Rise of Islam.
New York, London, 1905. 8°.

Maule, William M. The Charcoal Industry in the Philippine Islands. 2. La Industria del carbón vegetal en las islas Filipinas. *Manila*, 1906. 8°.

Department of the Interior, Bureau of Forestry, Bulletin No. 2.

Presd. by the Bureau.

Mehmed Tschelebi. Ein ursprünglich Türkisch verfaszter schwank in neupersischer übersetzung. Nach einer handschrift herausgegeben und ins deutsche übertragen von L. Pekotsch... Nach der Türkischen vorlage und einer Arabischen version untersucht und mit Textkritischen Anmerkungen versehen von Dr. M. Bittner. *Wien*, 1905. 8°.

Mills, *Dr.* Lawrence Heyworth. Zoroaster, Philo and Israel, being a treatise upon the Antiquity of the Avesta.
Leipzig, 1903-04. 8°.

Presd. by the Trustees of the Parsee Panchayet Funds and Properties, Bombay.

Missions Scientifiques au Spitzberg. Missions Scientifiques pour la Mesure d'un Arc de Méridien au Spitzberg. Entreprises en 1899-1902. Sous les auspices des Gouvernements Suédois et Russe. Tome I, II Sect., B; Tome I, V Sect.; Tome II, VII Sect., A; Tome II, VIII Sect., A, B, B$^{1-5}$, C; Tome II, X Sec. *Stockholm*, 1904. 4°.

Presd. by Mesure d'un Arc de Méridien au Spitzberg.

Modi, Jivanji Jamshedji. Asiatic Papers: papers read before the Bombay Branch of the Royal Asiatic Society.
Bombay, 1905. 8°.

Presd. by the Trustees of the Parsee Panchayet Funds and Properties, Bombay.

Murray, John. Handbook for Travellers in Asia Minor, Transcaucasia, Persia, *etc.* Edited by Major-General Sir Charles Wilson. With maps and plans. *London*, 1905. 8°.

Paris.—*Bibliothèque Nationale.* Catalogue des manuscrits Persans. Par E. Blochet. Tome I, *etc.* *Paris*, 1905, *etc.* 8°.

Sarasin, Paul and Fritz. Reisen in Celebes. Ausgeführt in den Jahren 1893-1896 und 1902-1903. 2 vols.
Wiesbaden, 1905. 8°.

Schroeder, Albert. Annam. Études Numismatiques. Text. and plates. *Paris*, 1905. 8°.

Srīnivāsa Dāsa. यतीन्द्रमतदीपिका (सटीका) [Yatīndramatadīpikā... With commentary called Prokāśa by Vásudeva Śāstrī.]
[*Poona*, 1906.] 8°.

Ānandāśrama Sanskrit Series, No. 50.

Tchang, Mathias, *S. J.* Synchronismes Chinois. Chronologie complète et concordance avec l'ére chrétienne de toutes les dates concernant l'Histoire de l'Extrême-Orient, *etc.*
Chang-Haï, 1905. 8°.

Variétés Sinologiques. No. 24.

Tisdale, *Rev.* W. St. Clair. The Original Sources of the Qur'ân
London, 1905. 8°.

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28. *Contributions to Oriental Herpetology. No. IV.—Notes on the Indian Tortoises.*—*By* N. Annandale, D.Sc., C.M.Z.S.
(With one plate.)

Although the Indian Museum possesses an almost complete collection of the known Indian Chelonia, there is comparatively little to be said about the specimens; few have been added during the last twenty years, and the late Dr. J. Anderson, who was mainly instrumental in getting the collection together, described the greater part of it in considerable detail. More recently, however, Mr. G. A. Boulenger's *Catalogue of the Chelonia in the British Museum* (1889) and *Reptilia and Batrachia* ("Fauna of India," 1890) have cast so much new light upon the group that notes may be useful on certain species. It is probable that considerable additions might be made to our knowledge if specimens were collected in the more remote districts of the Indian Empire, notably in Upper Burma and on the North-West Frontier. In the cases of land tortoises it is easy to transport living specimens, while even the skulls and shells of aquatic species would be valuable. In this connection I must express my thanks to Messrs. Vredenburg and Tipper, of the Geological Survey of India, and to the Political Agent at Kelat, for obtaining and sending to the Indian Museum from Baluchistan, a large series of one rare and important form. Similar consignments from other parts would be most gratefully received.

It is unnecessary to mention the marine species.

TRIONYCHIDAE.

Trionyx gangeticus, Cuvier.

We have several well-authenticated and typical skulls from Sind.

Emyda granosa (Schoepff).

The typical variety appears to be widely spread in Upper India, to which it is probably confined.

var. vittata.

E. vittata, *Boulenger, Faun. Ind., Rept.*, p. 17.

I cannot regard this form as more than a variety of *E. granosa*, its one constant diagnostic character being its coloration. Although it is common only in Ceylon and in Central and Southern India, it extends northwards into southern Bengal; I have examined specimens from Singhbhum. There are skeletons labelled as belonging to this form in the Museum from Chota Nagpur and Sind; but their varietal identity is uncertain.

TESTUDINIDAE.

Testudo elegans (Schoepff).

There is a young specimen in the Museum from the Calcutta Botanical Gardens; but Boulenger is probably right in stating the distribution of the species as "India (except Lower Bengal)," for many imported Reptiles have been found in the Botanical Gardens, and *T. elegans* appears to shun damp localities.

Testudo pseudemys, Boulenger.

T. pseudemys, *Boulenger* in *Annandale and Robinson, Fascic. Malay., Zool.*, 1, p. 144, Fig. 1 and Pl. IX.

A young specimen from Pegu in the Museum agrees closely as regards skull characters with the type. The antero-lateral margins of the vertebral shields are, however, less markedly shorter than the postero-lateral.

I have nothing to add to the discussion as to the distinction or agreement between *T. emys* and *T. phayrei;* but this specimen appears to be one of those associated with the latter name by Anderson.

Testudo horsfieldii, Gray (Pl. II, Fig. 2).

T. horsfieldii, *Boulenger, Cat. Chelonians*, p. 178.

There are specimens in the Museum from Afghanistan and Eastern Persia, and I have lately received twenty-three living examples from Kelat. The latter vary considerably in size and age, and are of both sexes; but although several have been injured in the carapace and plastron, all have the carapace flattened in the dorsal region. The skulls of eight specimens have been examined; they vary considerably in respect to the following characters: relative width; flatness; relative breadth of the postorbital arch; the development or absence of a transverse depression on the anterior part of the dorsal wall of the cranium; and the degree of serration of the upper jaw.

T. horsfieldii is an active species, walking, with considerable rapidity, very high on its legs. It is timid, but hisses when disturbed. When eating or drinking it occasionally emits a low croak like that of a frog. Captive specimens conceal themselves during the heat of the day and at night, feeding at dusk and in the early morning. They are fond of most flowers and fruits and of the thick, fleshy leaves of various plants; but they generally refuse to eat grass. They drink water greedily. Females captured in April contained eggs of the size of duck shot; in one oviduct of a large specimen killed towards the end of May there were five fully-formed eggs with a thick, calcarious shell. The eggs measured 50 mm. by 35 mm.

Testudo baluchiorum, Annandale (Pl. II, Fig. 1).

T. baluchiorum, *Annandale, in Journ. As. Soc. Bengal*, 1906, p. 75.

This species is very close to the preceding one. The main difference lies in the shape of the carapace, which in *T. baluchiorum* is not flattened in the dorsal region and descends more abruptly at the sides and in front. Neither the skull characters mentioned in my original account of *T. baluchiorum* nor the number of tubercles on the back of the thigh can be regarded as affording a constant diagnosis, as *T. horsfieldii* is evidently variable in these respects.

Of exotic tortoises of the genus *Testudo* in the Indian Museum, I may call attention to a large skull of the extinct *T. triserrata* from Mauritius, and series of skeletons of the Madagascan species *T. radiata*. Most of the specimens of the latter species are labelled "Mauritius," and it is probable that large numbers were at one time introduced into Calcutta from Madagascar *viâ* that island. It is probable, further, that the species, which has certainly been confused in some cases with *T. elegans*, is or was feral in parts of Bengal. As a parallel instance I may mention that the commonest terrestrial Mollusc in Calcutta gardens is a snail introduced from Mauritius, namely, *Achatina fulica*, Fér.

Nicoria trijuga (Schweigg.).

In my recent note[1] on the distribution of the var. *thermalis* of this species, I neglected to refer to Mr F. F. Laidlaw's[2] record of its occurrence in the Maldives, whither it has probably been brought from Ceylon. The var. *edeniana* probably occurs in Chota Nagpur, judging from the large size of skeletons from that district, as well as in Burma.

Bellia crassicollis (Gray).

In addition to specimens from Burma and Malaya, there is a skeleton in the Museum said to have come from Travancore. In several specimens examined, the serration of the posterior margin of the carapace is obsolete.

Morenia petersii, Anderson (Pl. II, Fig. 4).

There are several specimens in the Museum from the neighbourhood of Calcutta, as well as the types.

M. petersii is easily distinguished from *M. ocellata* (Pl. II, Fig. 3) by its coloration and by its skull characters; but the relative proportions of the plastral shields are not constant in either species.

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1 *Mem. As. Soc. Bengal* 1, p. 185.
2 In Gardiner's *Maldives and Laccadives*, Vol. I, p. 122.

A List of the Indian Tortoises.[1]

Trionycidæ—

1.	Trionyx subplanus, Geoffr.	...	Lower Burma.
2.	,, gangeticus, Cuv.	...	Ganges and Indus basins.
3.	,, leithii, Gray	...	South and Central India.
4.	,, hurum, Gray	...	Ganges and its tributaries.
5.	,, formosus, Gray	...	Rivers of Burma.
6.	,, phayrii, Theob.	...	Lower Burma.
7.	,, cartilagineus (Bodd.)	...	Lower Burma.
8.	Pelochelys cantoris, Gray	...	Ganges and Burmese rivers.
9.	Chitra indica (Gray)	...	Ganges and Irrawaddy.
10.	Emyda granosa (Schoepff.)	...	Peninsular India, Burma and Ceylon.
11.	,, scutata, Peters.	...	Irrawaddy.

Testudinidæ—

12.	Testudo elongata, Blyth	...	Bengal, Assam, Burma.
13.	? *Testudo leithii*, Gthr.	...	? Sind.
14.	Testudo elegans, Schoepff.	...	Peninsular India except Lower Bengal; Calcutta (? introduced); Ceylon.
15.	,, platynota, Blyth	...	Burma.
16.	,, emys Schleg. & Müll.	...	Assam ; Burma.
17.	,, pseudemys,* Blgr.	...	Lower Burma.
18.	,, horsfieldii,* Gray.	...	Kelat, Baluchistan.
19.	,, baluchiorum,* Annand	...	Baluchistan.
20.	Geomyda spinosa (Gray)	...	Lower Burma.
21.	,, grandis, Gray	...	Lower Burma.
22.	,, depressa, Anders.	...	Arakan hills.
23.	Nicoria trijuga (Schweigg.)	...	Peninsular India; the Punjab Burma ; Ceylon ; the Maldives.
24.	,, tricarinata (Blyth)	...	Chota Nagpur ; Bengal ; Assam.
25.	Cyclemys platynota, (Gray)	...	Lower Burma.
26.	,, dhor, (Gray)	...	Lower Burma.
27.	,, mouhoti, Gray	...	Assam ; Burma.
28.	,, amboinenses (Daud.)	...	Lower Burma ; Nicobars.
29.	Bellia crassicollis, Gray	...	Tenasserim ; Travancore.
30.	Damonia hamiltonii (Gray)	...	Northern Peninsular India ; the Punjab.
31.	Morenia ocellata (D. & B.)	...	Assam ; Burma.
32.	,, petersii, Anders.	...	Lower Bengal.
33.	Hardella thurgi (Gray)	...	Ganges and Indus systems.
34.	Batagur baska (Gray)	...	Bengal ; Assam ; Burma.
35.	Kachuga lineata (Gray)	...	Northern and Central Peninsular India ; Burma.
36.	,, trivittata (D. & B.)	...	Burma.
37.	,, dhongoka (Gray)	...	Ganges and Indus systems.
38.	,, smithii (Gray)	...	Upper Ganges and Indus and their tributaries.
39.	,, sylhetensis (Jerd.)	...	Assam.
40	*Kachuga intermedia*, Blanf.	...	Central Provinces ; Godaveri.
41.	Kachuga tectum (Gray)	...	Ganges and Indus systems.

Platysternidæ—

42.	Platysternum megacephalum, Gray	...	Burma.

[1] An * indicates that a species is new to the Indian fauna since 1890. The names printed in italics are those of species not represented in the Indian Museum.

29. *Note on a rare Indo-Pacific Barnacle.*—*By* N. Annandale, D.Sc., C.M.Z.S.

Specimens of a Barnacle (Figs. 1, 1*a*) which I regard as identical with Owen's *Conchoderma hunteri*, have recently been received at the Indian from the British Museum; they are labelled as having been taken on a sea-snake (*Hydrus platurus*) in Ceylon by Mr. E. E. Green. They differ from Darwin's description and figures (*Monogr. Cirr. Lep.*, p. 153, pl. III, fig. 3.) in the greater (but variable) relative length of the peduncle and in the fact that the terga are straight and the scuta, although of normal shape, hardly calcified at all. Hœk regarded Owen's species as probably no more than a variety of *C. virgatum* (Spengler), a more common and probably a more widely distributed form; and a specimen from the Ganges delta in the Indian Museum gives additional support to this view. In this specimen (Fig. 2) the scuta are distinctly **Y**-shaped, but the two upper arms are joined together at the base by a delicate, feebly calcified web; the terga and carina are narrow and almost straight. The coloration is that of Spengler's form; whereas the Ceylon specimens agree with the descriptions of the types of *C. hunteri*, which Darwin believed to be faded, in their almost complete lack of pigment. Evidently this absence of pigment is characteristic. The appendages and mouth-parts are normal in all the examples I have examined. Major A. R. Anderson, I.M.S., has recently presented to the Museum a *Hydrus platurus* from the Andamans to which typical examples of *C. hunteri* are attached.

Fig. 1.

Fig. 1*a*.

Fig. 2.

The Ceylon specimens may be regarded as slightly aberrant, examples of *C. virgatum* var. *hunteri*, while that from Bengal

represents an intermediate variety. The typical *hunteri* is probably confined to the tropical parts of the Indian and Pacific Oceans, the only localities hitherto fixed being the Maldives or Laccadives [1] and New Britain.[2] The form has been taken on *Hydrus platurus* on several occasions, and once on a telegraph cable.

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1 See Borradaile in Gardiner's *Maldives and Laccadives*, Vol. I, p. 441.
2 See Stebbing in Willey's *Zool. Results*, Part V, p. 676.

30. *The Rawāts and Merāts of Rājputāna.*—*By* R. C. Bramley. *Communicated by* R. Burn.

Introduction.

The method by which Hinduism has gradually but silently extended its influence over the animistic tribes of India was graphically described by Sir Alfred Lyall in criticising a statement made by the late Profesor Max Müller, that Brāhmanism was opposed to missionary work on its own behalf. Discussions which arose from enquiries made into problems in connection with the last census showed, however, that the process of absorption, though undoubtedly active, is not unaccompanied by difficulties. While the caste system of the Hindus is theoretically rigid, abundant evidence proves that, in reality, it is constantly being altered. Changes at present are chiefly disintegrations into separate endogamous groups, but at the same time there are instances of groups rising in position, and being recognised as members of one of the twice-born castes. As is only natural, the caste which chiefly receives accessions in this manner is the Rājput. Its high position in society renders it a desirable group to belong to, while at the same time its unique formation in a number of exogamous clans, the members of which are bound by strict though varying rules of hypergamy, make it easier to enter than any other. When communications were difficult, it was possible for a tribe, after undergoing the slow process of absorption into Hinduism, and acquiring the whole paraphernalia of mythical ancestors and the like, to assume the desired position in its own territory unquestioned. If its members subsequently acquired sufficient wealth and influence outside the tribal territory, there would not be much difficulty in contracting marriages with the lower groups of recognised Rājputs, after which the rest was easy. At the present time, however, contact with the outer world is easier ; fictions are thus more transparent, and, under the influence of a thin veneer of education, people are not content with the slow progress of former times. The circulation of printed books and railway communications have had results which have been often recorded; but the following careful study by Mr. R. C. Bramley, District Superintendent of Police in Ajmer-Merwāṛa, of the revolution in progress in a Rājputāna tribe, the Merāts and Rāwats, shows a new factor, the influence of military service. It is also valuable as illustrating the advantages which Islam possessed over Hinduism as a proselytising religion.

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Superintendent for Ethnography,
Rājputāna.

Introductory.

1. It is but seldom that an opportunity occurs of observing the rise and progress of a social revolution among the inhabitants of the country. Such

a movement, naturally, arouses considerable interest and is a fit subject of study. A social change is in progress in the small British district of Merwāṛa in Rājputāna. Those portions of the Merwāṛa clans who profess to be Hindus and who, up to 1903, intermarried and interdined with the Merāt Kāṭāts, who profess Muhammadanism, have now decided to abandon this intercourse, on the general ground that Hindus cannot intermarry and interdine with the adherents of another faith. It is a noteworthy thing that the inhabitants of a particular district, some of whom have professed Hinduism and others Muhammadanism for centuries, and yet have interdined and intermarried freely, should suddenly abandon these old-established social customs on the ground that their religions are different. For centuries this difference of religion has been no barrier to social intercourse. Then how comes it to pass that it is now put forward as the reason for discontinuing social customs which have been in vogue for so long a time? To trace the origin and progress of this movement, and to indicate its probable results, will be interesting as well as instructive. For the sake of convenience, the Hindu portion of the Merwāṛa clans will be referred to as Rāwats and the Muhammadan portion as Merāts. The term Rāwat, it may be explained, is, in reality, a petty title of nobility; but it is convenient, inasmuch as all Rāwats are Hindus.

Merwāṛa and the Merwāṛa Clans.

2. In order to be able to understand a social revolution of this nature, it is necessary to know something of the tract called "Merwāṛa" and of the people who inhabit it. Merwāṛa, which means the "hilly country" (Sanskrit *meru*, a hill) is a small British district in Rājputāna lying between 25° 24′ and 26° 11′ N. and 73° 45′ and 74° 29′ E., and is one of the two districts which make up the small province of Ajmer-Merwāṛa. Prior to 1818 its history is a blank. It was inhabited by people with the proclivities of Highland caterans, who acknowledged no master and who lived solely by plundering the surrounding Rājputāna States. With the advent of the British in 1818 the scene changes and the history of the district becomes one of its administration. Of the original inhabitants little or nothing is known. The district is said to have been an impenetrable jungle, and such information as is available goes to show that it was inhabited by Chandela Gūjars, Brāhmans, Bhāti Rājputs and Mīnas. The present people do not claim to be the original inhabitants. They are promiscuously designated "Mers" which means "hillmen." The name is not that of any caste or tribe and is only correct in so far as it means those who live on this portion of the Arāvali range. The inhabitants claim descent from Prithwī Rāj, the last Chauhān king of Ajmer, who ruled in the 12th century of the Christian era. The story is that Jodh Lākhan, the son of Prithwī Rāj, married a Mīna girl, who had been seized in a raid near Būndi, thinking her to be a Rājputni. Subsequently he discovered his mistake and turned her and her two sons Anhal and Anūp away. The exiles wandered to Chāng, in the Beāwar Pargana of Merwāṛa, and were hospitably entertained by the Gūjars of that place. One day the two

brothers were resting under a *bargad* tree (*Ficus indica*) and prayed that, if their race was destined to continue, the trunk of the tree might be rent in two. This occurred instantly and raised Anhal and Anūp from their despondency. The splitting of the fig tree is a cardinal event in the history of the race. There is a distich which runs :—

"Charar se Chītā bhayo, aur
Barar bhayo Bar-ghat
Shākh ek se do bhaye
Jagat bakhāni Jāt."

"From the sound "Charar" (the noise made by the splitting tree) the Chītās are called, and the clan Barar from the splitting of the fig tree. Both are descended from one stock. The world has made this tribe famous."

The Chītās.

3. Anhal settled at Chāng and, in course of time, his descendants exterminated the Gūjars who had succoured the exiles. This was the origin of the Chītā clan, which waxed strong and multiplied and established many villages in Merwāṛa and a few in Ajmer. There are several subdivisions of the Chītā clan, the most numerous and important of which is that of Merāts, a term synonymous with a Muhammadan Mer. The word "Merāt" is derived from Merā, the common ancestor of Merāt Kāṭāts, who are Muhammadans, and Merāt Goṛāts, who are Hindus. In the controversy which has arisen between the Hindu and Muhammadan clans of Merwāṛa the Merāt Kāṭāts represent the latter element—all other clans are arranged on the side of Hinduism.

The Merat Kaṭats.

4. The origin of the Merāt Kāṭāts here claims notice. One Hurrāj, the grandson of Merā, took service at Delhi under the Emperor Aurangzeb. During a night of terrific rain, he remained at his post as sentry and sheltered himself under his shield.[1] The matter was brought to the notice of the Emperor who is reported to have said :—

"In the Mārwāṛ tongue they call a brave soldier Kāṭa : let this man be henceforth called Kāṭa."

Shortly after this, Hurrāj embraced Muhammadanism and was the progenitor of the Merat Kāṭāts. The Kāṭāts settled in several villages in the Beāwar Tahsīl and spread northwards into Ajmer. They hold (1904) 93 villages in Merwāra.

The Merāt Goṛāts.

5. The Merāt Goṛāts, who are Hindus, are descended from Goṛā, who was the brother of Hurrāj. They spread southwards and are to be found principally in the Todgaṛh Tahsīl.

The Barar Clan.

6. The next clan which claims notice is the Barar clan. Anūp, the brother of Anhal, settled at Barsāwāṛa, now Todgaṛh, and founded the Barar clan. His descendants proved less enterprising than the

[1] The same story is told of several people, *e.g.*, Muḥammad Khān Bangash of Farrukhābād.—R. B.

Chītās and are to be found only in Merwāṛa. They like being called Rāwats.

Other Clans.

7. In addition to the Chītās (with their subdivisions of Merāt Kāṭāts and Merāt Goṛāts) and the Barar clans who claim descent from Anhal and Anūp, the grandsons of the Chauhān King, Prithwī Rāj, there are other clans such as the Pṛamar, the Motī, the Gehlot and others who claim descent from others than a Chauhān Mīna stock. Members of these clans are to be found in both Ajmer and Merwāṛa. It is not necessary to set forth in detail the ancestry of each. For the purposes of this controversy it is sufficient to say that they all profess Hinduism and are called "Rāwats," which in everyday use is understood to mean a *Hindu* Mer as opposed to a Merāt, by which is understood a *Muhammadan* Mer.

The Custom and Religious Beliefs of the Merwāra Clans.

8. Whatever the origin of the various Merwāṛa clans was, and whether they called themselves Hindus or Muhammadans, their customs were the same. With certain well-defined restrictions, such as that a Chītā could not marry a Chītā or a Baraṛ, the clans intermarried and interdined. These restrictions have, however, been modified since 1875. The Baraṛ clan live principally in the Todgarh Tahsīl. Enquiries made in that Tahsīl show that the Rāwats there gave up intermarrying 20 years ago with Merāts. The stopping of such marriages compelled Merāts to seek husbands for their girls elsewhere. So now Merāts marry Merāts. Chāng, Lūlwa and Jhāk are full of such marriages. It was by a mere chance that one of the descendants of Anhal embraced Muhammadanism and so introduced the religion into the district. The plant was an exotic which was compelled to struggle along as best it could. Even the bigot Aurangzeb made no attempt to compel the inhabitants, by fire and sword, to adopt his religion. No *Mullās* or *Maulvīs* sprang up in Merwāṛa to instruct the Merāts in the religion which they had adopted. Under these circumstances, it is matter for small wonder that Islām never gained ground in the district, and that those who profess the Muhammadan religion have always been in the minority. It is natural also that the Merāts, with their vague notions of the tenets of their religion and with no desire to make proselytes from their Hindu brethren, should continue the social customs of the majority of the inhabitants of Merwāra, with many of whom they had a common ancestor and with the majority of whom they had always intermarried and interdined. The fact of the matter is, that the difference in religion had hitherto been one in name only. The Hinduism of the Rāwats, like the Islām of the Merāts, is of a very vague and undefined description. The isolated position of Merwāṛa and its physical features have prevented it from being exploited by Hindu Fakirs and Muhammadan Mullās, disseminating the tenets of the Brāhmanical and Muhammadan faiths. Move through the Merwāṛa district, and stately Hindu temples and Muhammadan

mosques will not meet the eye. They are conspicuous by their absence. The ordinary Rāwat worships incarnations of Siva, such as Mātāji and Bhairūnji, and talks of Parameshwar in a vague way, without a clear understanding as to who Parameshwar is. "The Sarkār is our Parameshwar," was the answer once returned by a number of Rāwats, who were asked who Parameshwar was. As for the Merāts, they resort to circumcision and bury their dead, but, beyond this, it is doubtful whether they pay any attention to the tenets of their faith. In physique, habits and personal appearance, the Rāwats and Merāts are alike. Their dress is similar, and it is only the experienced eye which can detect, by small difference in their clothes, whether a Rāwat on a Merāt is being addressed. For instance both Rāwats and Merāts will wear a *bakhtarī*, a dhoti and a turban, which appear to be exactly similar; but the *bakhtarī* (jacket) worn by the Merāts will open on the left, that worn by the Rāwats on the right.

The influences which have brought about the movement in its present form and the contention of each clan.

9. Constituted as the Merwāṛa clans are, it is hardly likely that the elements of disintegration would be found within the house. Outside influences have been at work to bring about the present state of affairs. As far back as 1875 Mr. (Now Sir James) La Touche recorded in his Gazetteeer of Ajmer-Merwāra that a tendency was apparent on the part of the Merāts to abandon their ancient customs and assimilate with orthodox Muhammadans, while among the Rāwats of Todgaṛh the tendency was to adopt the rules of Brāhmanism, as practised by the Rājpūts of surrounding Native States. For some 25 years these tendencies appear to have lain more or less dormant, after which a series of events occurred, which have brought about a complete upheaval of the existing social customs of the clans. A good deal of feeling has been created on both sides, and the popular belief is that the present movement has been, and is being, fostered by those who enlist in regiments of the Indian Army, where they find themselves in anomalous positions besides orthodox Hindus and Muhammadans. Evidence is not wanting that the Brāhmanical influence has been stronger than that of Islām, and the Rāwats are, in reality, fostering the movement. Each clan seeks to throw the responsibility on to the other. The Rāwats contend that the movement has been brought about by the Merāts giving their daughters in marriage to Muhammadans of an undesirable class, and by marrying within degrees of relationship which are clearly prohibited. The beef-eating propensities of the Merāts are also mentioned as another item in the programme to which the Rāwats object These practices, which are, they say, abhorrent to them, have increased very much of late, and they only want the Merāts to abandon them and all will be well. The Merats. on their part, contend that they have not departed from their old-established customs as regards hose to whom they give their daughters in marriage or as regards

the degrees of relationship within which they marry, or in the matter of beef-eating, and that the rupture has been brought about by the Rāwats who want themselves considered "Rājputs." The situation as sketched by the people themselves is :—

(i) The general belief is that the movement is being fostered by those who have served or are serving in regiments, and this is the outside influence which has tended to bring about a rupture.

(ii) The Rāwats condemn the matrimonial practices and beef-eating propensities of the Merāts, and say that the extent to which these practices have increased of late is the cause of the dispute.

(iii) The Merāts deny the foregoing contention and say that the Rāwats have brought about the dispute by wanting to be considered 'Rājputs.'

It now remains to be seen what evidence has been produced in support of each of the above points.

The regiments which enlist Merwāṛa clans.

10. In order to be able to form an opinion as to what influences, if any, have been exerted by men who have served or are still serving in regiments, it is necessary to see which regiments in the Indian Army enlist Merwāṛa clans and what their organization is.

There are five such regiments :—

(i) The 44th Merwāṛa Infantry.
(ii) The 119th Rājputāna Infantry.
(iii) The 120th Rājputāna Infantry.
(iv) The 122nd Rājputāna Infantry.
(v) The 43rd Erinpura Regiment.

Numbers (i) and (v) are fixtures at Ajmer and Erinpura. Numbers (ii), (iii), and (iv) are stationed at places in the Western Command. The 119th, 120th and 122nd are each composed of two companies Gūjars (Western Rājputāna), two Companies Mers [1] (Western Rājputāna), two companies Rājputs (Eastern Rājputāna and Central India), and two companies Hindustāni Muhammadans. The 43rd Erinpura Regiment has about 200 Mers and Merāts, while the 44th Merwāṛa Infantry (late Merwāṛa Battalion) is composed entirely of Merwāṛa clans. This regiment stands by itself, and a brief history of it will, perhaps, not be out of place. The regiment was raised in June 1822 by Captain Hall, who was then in charge of Merwāṛa, as part of the policy whereby the wild clans of the district were reclaimed from their predatory habits. It was originally called the "Merwāṛa Local Battalion." In 1858 a second battalion called the "Mhair Regiment" was raised for services in the Mutiny. In 1860 the two battalions were amalgamated into what is known as the "Mhairwara Military Police

[1] Includes Rāwāts and Merāts.

Battalion" and continued under this name till 1871, when it was reorganised under the name of the "Merwāṛa Battalion," under which designation it continued till 1903, when, on the renumbering of the Native Army, it became the 44th Merwāṛa Infantry. It has always been composed entirely of Rāwats and Merāts, and no distinction was held between the clans until 1903, when the dispute assumed its present aspect, and orders were received that the regiment was to be composed of four companies Mers and four companies Merāts. These orders were recently modified and the organization of the regiment is now six companies Mers and two of Merāts. The right wing of the regiment went to Mhow for some six months in 1902, and, in the same year, some men of both clans went with the Coronation Contingent from the regiment. The 119th, 120th and 122nd Infantry move about in relief along with other regiments. These regiments have been enlisting men from Merwāṛa since 1887. It is, therefore, clear that the Merwāṛa clans have, during the last 17 years, come in closer contact with the various castes and creeds to be found in India than they did formerly. It would be only natural that they, with their vague religious ideas, should, in the course of time, be influenced by the orthodox followers of Hinduism on one hand and of Islām on the other, and should each strive to be considered orthodox followers of Hinduism, or Muhammadanism, in order to be able to free themselves from a social state which they both found anomalous. The belief that the outside influence which has caused the rupture has come from regiments is, therefore, based on reasonable grounds. To be able, however, to grasp the movement, it is necessary to go back to 1875—in which year Mr. (now Sir James) La Touche wrote his Gazetteer of Ajmer-Merwāṛa.

The progress of events from 1875 to 1900.

11. For some 25 years after Sir James La Touche wrote, the tendencies he indicated appear to have made but little or no progress. Outside influences had not been brought to bear on the clans, and Rāwats and Merāts intermarried and interdined or not according to their personal inclinations. About 1900, however, commenced a series of events which turned the scales, and it was about that year in which the question began to assume its present aspect. And here it becomes necessary to examine the contentions of the two clans.

The contention of the Rāwats.

12. As has already been stated, the Rāwats contend that the matrimonial practices and beef-eating propensities of the Merāts are responsible for the rupture. As regards the former, they state that the Merāts gave their daughters to low-class Muhammadans and marry within degrees or relationship which are prohibited. These statements are put forward, in the first instance, as if these practices were something quite new, but if those who make them be examined ever so lightly, they are compelled to admit that practices which they now apparently object to so strongly, have been going on for years, and they then endeavour to screen themselves behind the contention that they have increased to a very

great extent in recent years, and *this* has brought about the rupture. The Merāts reply to these allegations that they still give their daughters in marriages to the same Muhammadan families as in the past, and that they have always married within degrees of relationship (*i.e.*, cousins) to which the Rāwats now object. The enquiries made go to show that the Rāwats have by no means substantiated their case. Rāwats of various villages from the Todgarh Police circle on the south to villages in the Pushkar, Gegal and Srīnagar police circles in the Ajmer district on the north have been questioned as to the reasons of the split. They all give undesirable matrimonial alliances and the beef-eating propensities of the Merāts as the reasons, and say they gave up marrying at periods varying from 20 years ago onwards, for these same reasons. The matrimonial customs and beef-eating propensities of the Merāts are, on the showing of the Rāwats themselves, nothing new, and, it seems clear, that what the Rāwats term *reasons* are really *excuses*. Some of them have stated in the most barefaced manner that Merāt girls were married to "Mochīs" and "Regars" and other unclean sects in Ajmer and other places. These allegations have, on enquiry, been found inaccurate, and would appear to be wholly unjustified. Merāt girls are, as a rule, married to Merāts, while some are married to Khādims and such like in Ajmer. It is true that Muhammadans of high social standing will not intermarry with Merāts, though they will allow their "Golās" or sons from concubines to marry Merāt girls, because they cannot get wives from among good Muhammadan families for such sons. On the other hand, the Merāts certainly do not degrade themselves to the extent of giving their girls in marriage to Mochīs and other unclean sects. Numerically the Merāts are much inferior to the Rāwats. By the time their own brethren, Khādims and such like have been provided with wives, the number of marriageable Merāt girls must be very small. It is, therefore, probable that Rāwat-Merāt marriages[1] have never been very numerous. Isolated cases occur even now; one occurred in April 1904 in Chāng, but they are not acceptable to either clan. To whomsoever the Merāts marry their girls it has not been proved that they do so to persons lower in the social scale than the Rāwats themselves are The statement of the Rāwats as regards Merāts marrying their girls to unclean Muhammadan sects has been found inaccurate. The conclusion, therefore, as regards the contention of the Rāwats on the matrimonial aspect, appears to be clearly against them. The beaf-eating contention is not worth serious discussion. The Rāwats certainly have not progresssed along the paths of orthodox Hinduism to a degree which would justify their looking upon beef-eating with the same horror as a Brāhman. The beef-eating cry is a palpable excuse. The Rāwats have failed to substantiate their case. *Per contra* they appear to

[1] Many men (Rāwats), however, in the 44th Merwara Infantry, are reported to be married to Merāt women.

have made every effort to exaggerate it. The Merāts say they do not give their girls in marriage to new sects or marry them within closer degrees of relationship than before, and this has not been controverted by the Rāwats.

The contention of the Merāts.

12. Now as to the contention of the Merāts, that the Rāwats have brought about the rupture by wishing to be considered Rājpūts. To arrive at a conclusion, a series of events since 1900 have to be examined.

The social dispute between Rāwats and Merāts in a regiment about 1900.

13. About 1900, as far as has been ascertained, occurred the first of a series of events which, if not the origin of the movement in its present shape, gave it a considerable impetus. About that year a question arose in one of the regiments, which enlist men from Merwāṛa, regarding the social customs of the two clans, which appears to have developed into something approaching a dispute. It has not been possible to ascertain precisely what occasioned the difference, but accounts appear to agree that, while Merāts were allowed to eat and smoke with orthodox Muhammadans, the Rāwats, who claimed to be Hindus, and yet interdined with Merāts, were excluded by orthodox Hindus and Muhammadans alike. Thus, while the Merāts succeeded in getting themselves recognized as Muhammadans to an appreciable extent, apparently, the Rāwats were recognized by the followers of neither religion. They thus found themselves in a very anomalous, not to say awkward, position as compared with the Merāts, and their position was, no doubt, the theme of much discussion and comment and, perhaps, banter in the regiment. At this turning point in the history of the clans, the Merāts, by being allowed to smoke and dine with orthodox Muhammadans, would appear to have gained a decided advantage. The natural course for the Rāwats would be to do their utmost to free themselves from so invidious a position. Their brethren had, to some extent, got themselves recognised as Muhammadans. It, therefore, became incumbent that they should make efforts to get themselves recognised as orthodox Hindus. How the dispute was for the time being settled is by no means clear, but that it gave rise to a situation such as that sketched above seems certain. The advantage gained by the Merāts was a matter which the Rāwats could certainly not forget or forgive. Here, at any rate, was "the little rift within the lute." And now we may move on to the next step in the series of events under discussion.

The influence of Brahmanism and Islām.

14. Subsequent to the occurrence sketched in the preceding paragraph, the regiment in which the difference had occurred was transferred to Allahabad. The Rāwats found themselves at Prayāg, a holy place, where Brāhmanical influences are strong, which, no doubt, were brought to bear on them to a considerable extent. On the other hand, the Merāts came under the influence of Maulvīs and Mullās to a greater

extent than they had done before. Thus two antagonistic and powerful influences were brought to bear on the clans, whose difference in religion, had, so far, been one simply in name. The breach which had been caused by the unfortunate difference referred to was widened. Rāwats and Merāts ascended one more rung on the ladder of separation. The Brāhmanical influence was, apparently, the stronger, and events now commenced to move forward with a certain degree of celerity. Matters had gone too far to be allowed to stand still any longer.

The Meeting of Rāwats in the Srinagar Police Circle in Ajmer in April 1902.

15. The time had come for the Rāwats to decide whether they would continue their old social customs or not, and those who were engineering the movement decided, it seems, on the latter course. It became necessary to show by some unmistakeable action that ancient customs were to be abandoned. Accordingly, on the 18th April 1902, a meeting of about 250 Rāwats, some of whom were from Merwāra, took place in the Srinagar Police Circle, in the Ajmer district, at which it was proposed that Rāwats were not to give their daughters in marriage to Chitās, of whom Merāts are a subdivision, as they were Muhammadans. The meeting appears to have been more of a demonstration than anything else. It was not convened with the idea of laying down rules for future guidance, which were to have the force of law, so to speak. It did not result in the dispute assuming an acute form. The delegates met and stated Rāwat-Chitā marriages were to stop, but beyond talk of this nature, no decided action was the outcome of the meeting. So much, however, may be taken for certain, that the meeting was brought about by outside influences: it was the precursor of other meetings of a similar and more decisive nature, and was significant as indicating that the controversy had passed from the region of thought to that of action.

The Coronation Contingent.

16. In May 1902 the Coronation Contingent went to England. A detachment from the 44th Merwāra Infantry, then the Merwāra Battalion, consisting of members of both clans, formed part of it. The journey to and from, and the sojourn in, England appears to have accentuated the difference. The Rawats, it is said, gave themselves out as "Rājputs," but were twitted by orthodox Hindus from other regiments, who also formed part of the contingent and who, not unnaturally, expressed surprise at people who professed to be "Rājputs," eating their food with their clothes on instead of bare-headed and wearing only a *dhotī*. Furthermore, the Rāwats and Merāts used to eat together, it is said, and here again orthodox Hindus wanted to know how "Rajputs" could eat with those who professed Muhammadanism. Questions which were asked were distinctly awkward, and the Rāwats, it seems, were made to feel, more than ever, that, although they professed Hinduism, they were, really, in the matter of caste and religion, neither "fish, flesh, fowl, nor good red herring" in the

eyes of orthodox Hindus. Then again, it is said, the Merāts refused to eat the meat of the sheep and goats provided, because the animals had not been *hallāled*. The Rāwats, possibly, regarded this as an attempt on the part of their brethren to pose as better Muhammadans than they really were, and perhaps thought it was done on purpose. But, whatever the relations between the Rāwats and Merāts were, on the journey to and from and during their stay in England, the Rāwats appear to have realised more strongly than before that while the Merāts had, at any rate, some observances which were in conformity with orthodox Muhammadanism, they (Rāwats) had uncommonly few, if any, which conformed to orthodox Hinduism. The breach was widened still more and it became necessary for Rawāts to take further steps to get themselves recognized as orthodox Hindus.

The anti-kine-killing letters.

17. The men who went to England with the Coronation Contingent from the 44th Merwāṛa Infantry returned in August 1902. In the early part of September 1902 anti-kine-killing letters, similar to those which were circulated in Bengal and the United Provinces a few years back, were put into circulation. The letters were in Hindī, and the following is an English translation :—

> "A voice has been heard by Sri Jagannāthjī, saying, if any Hindu sells a cow to a butcher, or enters into any financial transaction with any butcher, I will go away to Ceylon. If anyone receiving this letter does not make five copies of it and distribute them he will be guilty of killing cows."

The circulation of these letters spread rapidly, but the movement was very closely watched by the police, and, by degrees, the circulation died out. The letters created no feeling among the populace generally, but, there are some points connected with the movement which appear to have an important bearing on the Rāwat-Merāt Controversy :—

(i) The villages in which the letters were first found appeared to indicate that the movement was one towards orthodox Hinduism on the part of the Rāwats.

(ii) The letters were put into circulation soon after the return of the Coronation Contingent. This lends colour to the idea that Rāwats, who had been to England, had something to do with the movement at its commencement. If orthodox Hindus of Ajmer had put the letters into circulation, they would have done so in 1899–1900, when the famine was raging, and, for some months, hundreds of cattle were killed daily at Naṣīrābād for the sake of the hides. For the purposes of the question under discussion, it is useful to know that Rāwats *were* concerned in the circulation of the letters very early in the day, and this at a time when some of them had recently returned from England, after a journey and sojourn in which the influence of orthodox Hinduism had been brought to bear on them with a considerable amount of force.

The Dadalia Conference.

18. For some months, after the circulation of the anti-kine-killing letters, matters remained dormant. In May 1903 a large meeting of Rāwats was held at Dadāliā in the Todgarh Police Circle in Merwāṛa. Some Rāwats will maintain that the meeting was held merely to re affirm social customs which had been dislocated by the famine of 1899-1900. Merāts will say that letters were circulated at the Conference requesting Rāwats to make their wives and daughters dress in Rājput fashion, but, whatever the meeting was held for, it set the whole community by the ears and raised the question in its present acute form. At the Dadāliā Conference it was laid down, in the most decided manner, that the former social intercourse was to cease. while the allegation that efforts were made at the Conference to make Rāwat women dress like Rajputnis is by no means devoid of foundation. The Conference was presided over by a Jogi of Sāran in Mārwāṛ, who is a priest of the Rāwats, and, ever since it was held, the whole social organization of the Merwaṛa clans has been upset. Petitions have been flying about, each party has accused the other of unworthy acts, and many harsh things have been said on both sides. A more unfortunate occurrence than the Conference at Dādāliā is not to be found in the annals of Merwāṛa.

Events since the Dadālia Conference.

19. Since the Dadāliā Conference a few incidents have taken place which claim brief mention. In September 1903 a meeting of Rāwats and Merāts was held at Beāwar at the time of the Tejājī Fair with a view, apparently, of settling the difference, but no understanding was arrived at owing to the terms imposed by each party, which will be referred to hereafter being well nigh impossible. An occasional letter has been circulated, saying, Rāwats are not to marry into Merāt families. There can be no question but that the social organization of the Merwāṛa clans has been seriously upset.

A review of the foregoing events and the conclusion as to the contention of the Merāts.

20. The foregoing series of events indicates that since 1900 Brāhmanical influence, in a powerful form, has been brought to bear on the Rāwats serving in regiments, and they, in their turn, have sought to influence their fellow clansmen in their villages. The difference in the regiment (para. 13) showed clearly that the Merāts adapted themselves to the Muhammadan faith and were, to a certain extent, recognized as Muhammadans by orthodox followers of the Prophet. The Rāwats, on the other hand, could not gain admission to the more rigid folds of orthodox Hinduism. They called themselves Hindus, but were not recognized as such in the regiments in which they served. Ever since the movement sprang up in its present shape, the Brāhmanical influence has been stronger than that of Islām and has been impelling the Rāwats to get themselves considered orthodox Hindus. The majority of them claims a Rājput (Chauhān) ancestry, and, in fact, have commenced to record themselves as Chauhāns, when entering service at a

distance from their homes. If they could only make themselves out Rājputs, and be recognized as such, their hearts' desire would be attained and the matter would be settled. They do not appear to have recognized the difficulties which would beset the realization of their dreams. They started on their course without properly feeling their way, and succeeded in upsetting the social organization of the Merwāṛa clans at the Dadāliā Conference, without bettering their own social position in the slightest degree. A review of the situation since 1900 shows that the contention of the Merāts, that the rupture has been brought about by the Rāwats wanting themselves considered "Rājputs," has a considerable amount of force in it. At any rate, the Merāts have gone a much longer way towards proving their contention than the Rāwats have theirs.

The attitude of the people generally, the relations between the parties and probable consequences of the quarrel.

21. Such is the history of this remarkable rupture as gleaned from Rāwats and Merāts *themselves*. The quarrel is, naturally, between those who live in Merwāṛa principally. There are some Chītā and Rāwat villages in Ajmer, but their inhabitants have played a minor part in the matter. The attitude of the people of Merwāṛa towards the rupture is, generally speaking, one of apathy. They know of the quarrel, they feel the outside influence, but they are too much concerned with their daily avocations to give the subject much thought. The controversy is, to all intents and purposes, confined to those villages which provide men for regiments, though, of course, meetings like that at Dadāliā have helped to spread the difference. The relations between the parties are, naturally enough, not cordial, but while the Rāwats are agitating with the sole object of getting themselves recognized as Rājputs, the Merāts are not much put out about the social aspect. The religious feeling is not strong enough *yet*, on the part of the Merāts, at at any rate, to bring about any untoward consequences, but the harmony which formerly prevailed among the Merwāṛa clans has been shaken to a considerable extent, and the social organization upset. These consequences are, in themselves, regrettable. It would be a thousand pities if the social organization of the Merwāṛa clans, as it existed prior to their quarrel, assuming an acute form, were swept away. It was an organization peculiarly its own and conduced to harmony and peace throughout the district. For the Rāwats to try and destroy this desirable state of things, by a ludicrous attempt to get themselves recognized as Hindus of high social standing, is very unwise.

Chances of reconciliation.

22. It may be asked if there are any chances of a reconciliation. Some influential men on both sides appear to think reconciliation is possible. Rāwats and Merāts discussed the question at the meeting held at the Tejājī Fair, at Beāwar, in September 1903. Each side imposed certain conditions. The Rāwats wish the Merāts to—

(i) Cease intermarrying among themselves.
(ii) Cease giving their daughters in marriage to Muhammadans.
(iii) Cease eating the flesh of cows or buffaloes.
(iv) Cease giving their pipes to Muhammadan Fakirs to smoke.[1]

The Merāts, on their part, required the Rāwats to—

(i) Cease eating pig.
(ii) Cease eating animals killed by violence, *i.e.*, otherwise than *hallāled*.

If the Merāt-Kāṭāts and Merāt-Goṛāts[2] could be induced to come to an understanding a reconciliation might possibly be effected, but, it is alleged, that there are some mischief-makers about, who are preventing a reconciliation. A committee of influential, broadminded, tolerant men of both clans, with a competent President, might possibly effect a good deal. The Merāts have, so far, maintained a very reasonable attitude as regards the quarrel. The Rāwats, by holding meetings such as the Dadāliā one, have agitated in a manner very distasteful to the Merāts. With skilful and patient handling the clans may yet be induced to forget and forgive and return to their former social customs, but the chance of a reconciliation *now* seem very remote. It may be noted that the Merāts have not held a single meeting so far after the fashion of the Rāwats.

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[1] Another condition the Rawāts wish to impose is said to be that a Rawāt woman married to a Merāt should be burned at death They have always been buried.

[2] The Merat-Goṛats are said to be the keenest on separation of all the various Rawāt clans. Enquiries in Merwāṛa have not revealed that they were agitating more than others.

31. *The Revenue Regulations of Aurangzib* (with the Persian texts of two unique *farmāns* from a Berlin Manuscript.)—*By* Jadu-nath Sarkar, M.A., *Professor, Patna College.*

Introduction.

A Persian manuscript of the Berlin Royal Library (Pertsch's Catalogue, entry No. 15 (9) *ff.* 112, *b.*-125, *a.* and 15 (23) *ff.* 267, *a.*-272, *a.*) gives, among other things, two *farmāns* of the Emperor Aurangzib. I have not met with any other copy of these documents in any European or Indian public library; the first (the *farmān* to Muhammad Hāshim) is absolutely unique; but of the other (the *farmān* to Rasik Dās) a second but very incorrect copy was presented to me by Maulvi Muhammad 'Abdul-'Aziz of Bhitri Sayyidpur, District Ghazipur, the agent of Mr. W. Irvine, I.C.S. (retired). The Berlin MS., though beautifully written, is often incorrect. The text of the first *farmān* is accompanied by a highly useful commentary in Persian, written on smaller leaves placed between but paged consecutively. In my edition of the text, every important departure from the original has been noted, but evident slips have been silently corrected. In two places good readings could be secured only by departing very far from the text; but this I have not ventured to do, preferring to leave the original unaltered. Photographic reproductions (rotary bromide prints) of the Berlin MS. were secured for my work.

For the meanings of Indian revenue terms I have consulted (1) *British India Analyzed* (ascribed to C. Greville), London, 1795, Part I.; (2) Wilson's Glossary; and (3) Elliot and Beames's Supplementary Glossary, 2 vols. The last two are likely to be accessible to the reader; and I have referred, in my notes, to the first work only, partly on account of its extreme scarcity and partly because it was nearest in time to the period of Mughal rule. The Berlin MS. will be called the A Text, and the Ghazipur one the B Text. The punctuation of the text is my work.

Translation.

Farmān of the Emperor Aurangzib-'Alamgir, in the year 1079 *A.H.*,[1] *on the collection of revenue.*

[112, *b.*] Thrifty Muhammad Hāshim, hope for Imperial favours and know—

That, as, owing to the blessed grace and favour of the Lord of Earth and Heaven, (great are His blessings and universal are His gifts!) the reins of the Emperor's intention are always turned to the purport of the verse, "Verily God commands with justice and benevolence," and the Emperor's aim is directed to the promotion of business and the regulation of affairs according to the Law [113, *a*] of the Best of Men, (salutation and peace be on him and

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1 June 1668—May 1669; the 11th year of the reign.

his descendants, and on his most virtuous companions!)—and as the truth of [the verse] "Heaven and earth were established with justice" is always acceptable in the eyes [of the Emperor] as one of the ways of worshipping and honouring the Omnipotent Commander, and friendliness and benevolence to high and low is the aim of the illuminated heart [of the Emperor], —.

Therefore, at this auspicious time, a *farmān* of the high and just Emperor is issued,—

That officers of the present and future and *'amils* of the Empire of Hindustan from end to end, should collect the revenue and other [dues] from the *mahals* in the proportion and manner fixed in the luminous Law and shining orthodox Faith, and [according to] whatever has been meant and sanctioned in this gracious mandate in pursuance of the correct and trustworthy Traditions,—

And they should demand new orders every year, and consider delay and transgression as the cause of their disgrace [113, *b*.] in this world and the next.

[*Commentary*, 113, *b* margin:—The purport of the introduction is only the transaction of affairs and threatening with [the anger of] God for the performance of the royal order and for the sake of [according] justice to the officers, and benevolence mercy and convenience to the peasants in the collection of revenue, etc., agreeably to the Holy Law.]

First.—They should practise benevolence to the cultivators, inquire into their condition, and exert themselves judiciously and tactfully, so that [the cultivators] may joyfully and heartily try to increase the cultivation, and every arable tract may be brought under tillage.

[*Commentary*, 113, *b* margin:—Concerning what has been written in the first clause the wish of the just Emperor is, "Display friendliness and good management which are the causes of the increase of cultivation. And that [friendliness] consists in this that under no name or custom should you take a *dām* or *diram* above the fixed amount and rate. By no person should the ryots be oppressed or molested in any way. The manager of affairs at the place should be a protector [of rights] and just [in carrying out] these orders."]

Second.—At the beginning of the year inform yourself, as far as possible, about the condition of every ryot, at to whether they are engaged in cultivation or are abstaining from it. If they can cultivate, ply them with inducements and assurances of kindness; and if they desire favour in any matter show them that favour. But if after inquiry it is found that, in spite of their being able to till and having had rainfall, they are abstaining from cultivation, you should urge and threaten them and employ force and beating. Where the revenue is fixed (*Kharāj-i-muazzaf*) inform the peasants that [115, *a*] it will be realised from them whether they cultivate or not. If you find that the peasants are unable to procure the implements of tillage, advance to them money from the State in the form of *taqāvi* after taking security.

[*Commentary*, 114, *a*:—The second clause proves that the only business of peasants is to cultivate and so pay the revenue of the State and take their own share of the crop. If they lack the materials of cultivation, they should get *taqāvi* from the Government, because, as the king is the owner [of the land], it is proper that when the cultivators are helpless they should be supplied with the materials of agriculture. The emperor's desire is the first. And threatening, beating and chastisement are [ordered] with this view that, as the king is the owner, [and] always likes mercy and justice,—therefore it is necessary that the ryots too should, according to their own custom, make great exertions to increase the cultivation, so that the signs of agriculture may daily increase. This thing is the cause of the gain of the State and the benefit of the ryots.]

Third.—About fixed revenue: If the peasant is too poor to get together agricultural implements and runs away leaving the land idle, give the land to another on lease or for [direct] cultivation [as a tenant at will?], and take the amount of the revenue from the lessee in case of lease, or from the share of the owner in case of [direct] cultivation. If any surplus is left, pay it to the owner. Or, substitute another man in the place of the [former] owner, in order that he may, by cultivating it, pay the revenue and enjoy the surplus [of the produce.] And whenever the [former] owners again become capable of cultivating, restore the lands to them. If a man [115, *b*] runs away leaving the land to lie idle, do not lease it out before the next year.

[*Commentary*, 114, *b*:—In what has been written about giving lease, entrusting to cultivators for [direct] cultivation, taking the amount of the revenue from the lessee [in case of lease] and from the owner's share in case of [direct] cultivation, and paying one-half to the *mālik*, *i.e.*, to the former cultivator,—the word *mālik* (owner) does not mean 'proprietor of the soil' but 'owner of the crop in the field'; because, if the word 'owner' meant 'proprietor of the soil,' then the owner would not run away through poverty and want of agricultural materials, but would rather sell his land and seek relief in either of these two ways: (i) throwing the payment of Government revenue upon the purchaser, (ii) devoting the sale-proceeds of his owner's right to the removal of his own needs. As for the words "substitute another man for the [former] owner," the rightful substitute for a proprietor can be none but his heir, and this is the distinctive mark of ownership. Therefore, the word 'substitute' as used here means 'a substitute for the owner of the crop.' But in the case in which a man, after spending his own money and with the permission of Government, cultivates a waste land which had paid no revenue before, and having agreed to its assessment for revenue pays the revenue to the State,—such a man has [true] tenant's right to the land he cultivates, because he is the agent of reclaiming the land. The real owner is he who can create a substitute for the owner, *i.e.*, the king. It is a well-known maxim, "Whosoever wields the sword, the coins are stamped in his name." As for the expression "pay

half [the produce] to the owner, and do not lease out the field to anyone else for a year afterwards,"—the intention is that, as the fixed revenue (*Kharāj-i-muazzaf*) is not affected by the productive or barren nature [of the year], in both cases the cultivator has to pay the revenue in cash. As the Emperor likes leniency and justice, [he here orders] that the officers should kindly wait for one year [for the return of a fugitive ryot] and, in the case of [direct] cultivation or lease, they should pay to him any surplus left above the Government revenue.]

Fourth.—Inform yourself about the tracts of fallow (*uftāda*) land which have not returned to cultivation. If they be among the roads and highways, enter them among the area (? *banā*) of towns and villages, in order that none may till them. And if you find any land other than these, which contains a crop that stands in the way of its tillage, then do not hinder [the cultivation] for the sake of its revenue. But if it be capable of cultivation, or really a piece of land fallen into ruin (*bāir*), then in both these cases, in the event of the land having an owner and that owner being present and able to cultivate it, urge the owner to till it. But if the land has no owner, or if the owner is unknown, give it to a man who can reclaim it to reclaim. Thereafter, if the lessee be a Muhammadan and the land [117, *a*] adjoins a tract paying tithes, assess tithes on it; if it adjoins a rent-paying tract, or if the reclaimer of the land be an infidel, lay the full revenue on it. In case the [standard] revenue cannot be realised, as prudence may dictate, either assess the land at something per bigha by way of unalterable rent,—what is called *Kharāj-i-muqaṭṭ'at*,[1]—or lay on it the prescribed revenue of half the crop,—which is called *Kharāj-i-muqāsema*. If the owner be known, but is quite unable to cultivate it, then if the land had been previously subject to *Kharāj-i- muqāsema*, act according to the order issued [for this class of revenue]. But if it be not subject to *Kharāj-i-muqāsema* or is not bearing any crop, then do not trouble [the owner] for tithes or revenue. But if he be poor, engage him in cultivation by advancing *taqāvi*.

[*Commentary* 116, *a*:—Fourth clause: "When the land forms part of highways or is really waste or owned by a person unknown, or when the owner is quite unable to till it," and other expressions. In all these cases the word owner is used in the former sense. And there is a possibility of ownership being used in the latter sense too, as described before. There are many proofs, more manifest than the Sun and more evident than yesterday, in support of 'owner' being used for the king. For the sake of brevity they have not been mentioned here.]

Fifth.—As for a desert tract (*bādia*), if the owner be known, leave it with him; do not give possession of it to others, [117, *b*]. If the owner be not known, and there is no chance of '*audāt*[2] in the land, then, as policy may dictate, give the land to whomsoever

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[1] Bilmokta—'land held at a low unalterable rent.'—(*Brit. Ind.*, p. 151.)
[2] عودة return.

you consider fit to take care of it. Whosoever makes it arable must be recognised as the owner of the tract and the land should not be wrested from him. If the land contains articles of *'audāt* (?), do not issue any order that may hinder the *'audāt* in the land; and as for the gain from the land, forbid sowing, etc.; and do not let anyone take possession of it, and recognise none as its owner.

If an entire [1] tract of waste land has been transferred for any reason, and a contrary state of things is brought about by a different cause, then regard the land as belonging to the man up to the time till when it was in his possession, and do not give possession of it to anybody else.

[*Commentary*, 116, *b*:—In the fifth clause it has been written: "If the owner of a desert tract be present, entrust it to him; otherwise, give it, as advisable, to a fit person who may reclaim it to cultivation; recognise him as its owner, do not wrest it from him,—if there is no probability of 'audāt in it," and other things. Here the word *'audāt* has two meanings: (i) that the land is likely to contain mines, and (ii) that the [original] owner may return to it. The second alternative which has been stated before, is clearly evident here, "Whosoever makes a land fit for cultivation should be recognised as its owner." It means that, as with the permission of the ruler he cultivates a waste unproductive land and benefits the State, therefore he has a claim to the land based on his services. Hence the imperial order runs: "Whosoever makes a land fit for cultivation should be recognised as its owner, and the land should not be wrested from him." Then it is evident that none else can have any right to the land. "As for the gain from the land, etc."—*i.e.*, if hereafter someone else sets up a claim to ownership, he should not be given possession of the profit from this land, such as the price of crops or [the gain from] gardens, tanks, and such things. The reason is that this land had been paying no rent before, and therefore the man who has reclaimed it and none else has a right to it.

"And if a tract of waste land, etc."—*i.e.*, if a tract of waste land is in its entirety transferred to another person, either on account of its having had no owner, or by reason of the man having reclaimed the land by his own exertions from unproductiveness and incapacity to pay revenue, then the man who first owned it and from whom it was transferred to the former, has a right to the price of the produce of the transferred land up to the time when it ceased to produce anything. This produce had no connection with the man to whom the land has been transferred, because the land belongs to him only from the time of the transfer.]

Sixth.—In places where no tithe or revenue has been laid on a cultivated land, fix whatever ought to be fixed according to the Holy Law. If it be revenue, fix such an amount that [119, *a*] the ryots may not be ruined; and for no reason exceed half [the crop], even though the land may be capable of paying more. Where the

[1] در بست entire, undivided.

amount is fixed, accept it, provided that if it be *Kharāj*, the Government share should not exceed one-half, lest the ryots be ruined by the exaction. Otherwise reduce the former *Kharāj* and fix whatever the ryots can easily pay. If the land is capable of paying more than the fixed [amount] take (?) more.

[*Commentary*, 118, *a* :—In the sixth clause: The wish of the benevolent Emperor is that the revenue should be so fixed that the peasantry may not be ruined by payment of it. The land belongs to the king, but its cultivation depends on the ryots; whenever the ryots desert their places and are ruined, *i.e.*, when they are crushed by the excessive exactions and oppression of the officers, one can easily imagine what the condition of the cultivation would be. Hence urgent orders are issued in this clause. And the statement in the last portion, "If the land is capable of paying more than the fixed amount, take more," is contrary to the order in the first portion of the same clause. Probably it is an error of the scribe. He must have imagined that as this passage is insistent, it ought to be read as 'take.' The reason is that in the first portion there is a total prohibition [of taking more revenue], "although it can pay more, do not take more than one-half," and again here the Emperor orders "do not take more than the prescribed amount," such an order strengthens the first order, nay more, the repetition of the order is for the purpose of strong insistence.]

Seventh.—You may change fixed revenue (*muazzaf*) into share of crop (*muqāsema*), or *vice versa*, if the ryots desire it; otherwise not.

[*Commentary* :—The order for changing one kind of revenue into another at the wish of the ryots is for their convenience.]

Eighth.—The time for demanding fixed revenue is the harvesting of every kind of grain. Therefore, when any kind of grain reaches the stage of harvest, collect the share of revenue suited to it.

[*Commentary* :—The object is, whenever the revenue is demanded at harvest, the ryots may, without any perplexity, sell a portion of the crop sufficient to pay the revenue and thus pay the due of the State. But, if the demand is made before that time, it puts them into perplexity and anxiety. Therefore, the Emperor's order is to seek their convenience.]

Ninth.—In lands subject to fixed revenues, if any non-preventable calamity overtakes a sown field, you ought to inquire carefully, and grant remission to the extent of the calamity, as required by truth and the nature of the case. And in realising [119, *b*.] produce [1] from the remnant, see that a net one-half [of the produce] may be left to the ryots.

[*Commentary*, 118, *b* :—"If *Kharāj-i-muazzaf* has been fixed on a land, and a calamity befalls some crop of the land by which it is not totally destroyed, then you ought to inquire into the case,

[1] Text has *mahsul*, which may also mean 'revenue.'

and deduct from the revenue to the extent of the injury done; and from the portion that remains safe, take so much of the produce (*mahsul*) that the ryot may have a net one-half"; *e.g.*, ten *maunds* are [usually] produced in a field; on account of the calamity six maunds only are left [safe], the net half of this is five maunds; therefore, you should take one maund only [as revenue], so that the net half (*viz.*) five maunds may be left to the ryot.]

Tenth.—In lands with fixed revenues: If anybody leaves his land untilled, in spite of his ability to till it and the absence of any hindrance, then take the revenue [of it] from some other[1] [field in his possession.] In the case of fields which have been flooded, or where the [stored] rain-water has been exhausted, or any non-preventable calamity has overtaken the crop before reaping, so that the ryot has secured nothing, nor has he time enough left for a second crop to be raised before the beginning of the next year,—consider the revenue as lost. But if the calamity happens after reaping, whether it be preventable like eating up by cattle or after the calamity sufficient time is left [for a second crop], collect the revenue.

[*Commentary*:—"If a man holds a land on which *Kharāj-i-muazzaf* has been laid, and he has the power to cultivate it, and there is no obstacle to his cultivating, and yet he leaves it untilled. —then realise the revenue of that land from any other land belonging to the man, because he left his land idle in spite of his being able to till it and there being no obstacle. If any land belonging to the man is flooded or the rain-water which had been dammed up for irrigation of crops gets exhausted, and the crop is ruined, or if any non-preventable calamity befalls his crops, before they have ripened and been harvested, so that he secures no crop nor has he any time left for raising a second crop that year,—then do not collect the revenue. But if any non-preventable calamity overtakes the crop of the man after reaping, or if the calamity takes place before the reaping but enough time is left for a second crop that year, take the revenue (*mahsul*)," because the calamity happened through his own carelessness after the reaping of the corn. And so, too, "if the calamity happens before the reaping, but time enough is left for another crop," then [as the loss] occurred through his neglect, it is proper to take revenue from him.]

Eleventh.—If the owner of a land, subject to a fixed revenue, cultivates it but dies before paying that year's revenue, and his heirs get the produce of the field [121, *a*] collect the revenue from them. But do not take anything if the aforesaid person died before cultivating and [time] enough is not left that year [for anyone else to till it].

[*Commentary*, 120, *a*:—What has been published about "the death of the owner of the land, taking the revenue from his heirs, and not demanding the revenue from the heirs if he died before tilling" is manifestly just; because the land-owner, *i.e.*, truly

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[1] *B'aze Zamin*—See Wilson, p. 69, i. "The Baze Zamin or certain lands set apart for various uses."—(*Brit. Ind.*, p. 276.)

speaking the owner of the crop, died before cultivating, and so it is far from just to collect revenue from his heirs, even though they may have got something from him by way of bequest; for the [true] owner of the land is the king, and the owner of the crop, *i.e.*, the deceased [ryot] died before cultivating, and his heirs have not got anything or crop that may be a ground for [demanding] revenue, so, nothing should be collected from them.]

Twelfth.—Concerning fixed assessments: If the owner gives his land in lease or loan, and the lessee or borrower cultivates it, take the revenue from the owner. If the latter plants gardens, take the revenue from the latter. But if a man after getting hold of a *Kharāji* land denies it, and the owner can produce witnesses, then if the usurper has cultivated it, take the revenue from him; but if he has not done so, take the revenue from neither of them. If the usurper denies [the usurpation] and the owner cannot produce witnesses, take the revenue from the owner. In cases of mortgage (*rihan*), act according to the orders applicable to cases of usurpation. If the mortgagee has engaged in cultivation without the permission of the mortgager, [121, *b*] [exact the revenue from the former].

[*Commentary*, 120, *b*:—This order may be construed in either of the following two ways, or it will yield no sense: "If the owner of a land under fixed revenue gives his land in lease or loan, and the lessee or borrower cultivates it, realise the revenue from the owner. If the latter has planted gardens on it, take the revenue from him, because he has planted the gardens. If a man after getting hold of a *Kharāji* land denies it, and the owner has witnesses, then, in the case of the usurper having tilled it, take the revenue from him, but if he has not done so take the revenue from neither of them. If the usurper denies [the usurpation] and (i) the owner *has no* witness, take the revenue from the owner." This is one construction. The other is (ii) "if the owner *has* witnesses, take the revenue from the owner," *i.e.*, the usurper denies [the usurpation] and the owner produces witnesses to prove his own cultivation, therefore the owner should pay the revenue.

"In cases of mortgage act according to the orders issued for cases of usurpation. If the mortgagee has engaged in cultivation without the consent of the mortgager, [demand the revenue from the former]," because if the mortgagee engaged in cultivation *with* the consent of the mortgager, the latter ought to have paid the revenue, because the right to cultivate is [here] included in the mortgage. But if he has engaged in cultivation *without* the mortgager's consent, he ought to pay the revenue, because the land alone, and not the right to cultivate it, was mortgaged.]

Thirteenth.—About lands under fixed revenue: If a man sells his *Kharāji* land, which is cultivated, in the course of the year, then, if the land bears one crop only and the buyer, after taking possession, gets enough time during the rest of the year to cultivate it and there is none to hinder him, collect the revenue from the buyer; otherwise from the seller. If it yields two crops, and the seller has gathered in one and the buyer the other, then divide

the revenue between the two. But if the land is [at the time of sale] under a ripe crop, take the revenue from the seller.

[*Commentary*, 122, *a*:—If a man wishes to sell his land, *i.e.*, the crop of his land, and the purchaser gets sufficient time during the year to cultivate it, take the revenue from the purchaser. If it bears two crops, of which the seller has gathered in one and the buyer the other, divide the revenue and collect it from the two parties. If the land be under a ripe crop, take the revenue from the seller, because as the crop is ripe and the seller has sold it with full knowledge, he must have taken the price of the ripe grain. Therefore the seller should pay the revenue.]

Fourteenth.—Concerning lands under fixed revenue: If a man builds a house on his land, he should pay the rent as fixed before; and the same thing if he plants on the land trees without fruits. If he turns an arable land, on which revenue was assessed for cultivation [123, *a*] into a garden, and plants fruit-trees on the whole tract without leaving any open spaces [fit for cultivation], take Rs. $2\frac{3}{4}$ upwards (? *bālā*), which is the highest revenue for gardens, although the trees are not yet bearing fruit. But in the case of grape and almond trees, while they do not bear fruit take the customary revenue only, and after they have begun to bear fruit, take Rs. $2\frac{3}{4}$ upwards (?), provided that the produce of one legal *bigha*, which means 45×45 Shah Jahani yards, or 60×60 legal yards, amounts to Rs. $5\frac{1}{2}$. Otherwise take half the actual produce [of the trees]. If the price of the produce amounts to less than a quarter-rupee,—as in the case when grain sells at 5 Shah Jahani seers a rupee and the Government share of the crop amounts to one seer only (?)[1]—you should not take less than this [quarter-rupee].

If a man sells his land to a Muhammadan, demand the revenue in spite of his being a Muslim.

[*Commentary*, 122, *b*:—If a man owns a land under a fixed revenue, and builds a house on it or plants a garden of trees that bear no fruit, there should be no change in its revenue, the former revenue should be taken. If a garden is planted on a land which was used for cultivation and on which the revenue of culturable land was fixed, and the fruit-trees are placed so close together that no open space is left for tillage, take Rs. 2-12. which is the due (*hāsil*) of gardens, even while the trees do not bear fruit. But in the case of grape and almond trees, the [usual] revenue is taken while they have not begun to bear fruit, and afterwards the due (*hāsil*) of gardens. But if this due of gardens, which is fixed at Rs. 2-12—on the ground that the total yield (? *rab'a*) of a legal *bigha* including the owner's share, may reach to Rs. 5-8—does not reach that amount, then take half the actual produce as revenue.[2]

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1 Is not this a very round-about way of saying that when the revenue in kind is worth only $\frac{1}{5}$ of a rupee, a quarter-rupee should be regarded as the minimum assessment?

2 In revenue by division of crops, the State took only $\frac{1}{3}$ of the gross produce in the case of grain; but $\frac{1}{4}$ to $\frac{1}{5}$ in the case of opium, sugar-cane, vine plantain, and cotton. (*Brit. Ind*, p. 179)

But if the price of this half-share of the produce be less than As. 4—as, in the case of grain, if you get one seer in five Shah Jahani seers (?)—do not take less [than As. 4]. If an infidel sells his land to a Muhammadan, collect the revenue from the latter, because in truth it was not the latter's possession].

Fifteenth.—If any man turns his land into a cemetery [123,*b*] or *serāi* in endowment (*waqf*), regard its revenue as remitted.

[*Commentary*, 124, *a* :—As it is a pious act to endow tombs and *serāis*, therefore the Emperor forbids the collection of revenue from them, for the sake of benefiting and doing good [to the public]. Revenue ought not to be taken [from such lands].

Sixteenth.—About revenue by division of crops (*kharāj-i-muqāsema*) : If a man, whether Hindu or Muhammadan, is not the owner of a revenue-paying land, but has only bought it or holds it in pawn, he ought to enjoy the profit from whatever is produced in it. Collect from him the proper portion which has been fixed [as revenue],—provided that the share is neither more than one-half nor less than one-third [of the total crop]. If it be less than one-third, increase it, [if more than one-half, decrease it], as you consider advisable.

[*Commentary* :—If a man is not the real owner of a *muqāsema* land, but holds it [by purchase or] in pawn, he ought to enjoy the gain from the land, whether he be Hindu or Muhammadan, on condition that in case of mortgage he has received permission [to till] from the mortgager. Therefore, collect from him the portion [previously] fixed as the assessment on that land. But this portion ought not to be more than one-half nor less than one-third. If more than one-half, decrease it, if less than one-third, increase it, to a proper amount.]

Seventeenth.—If the owner of a *muqāsema* land dies without leaving any heir, act, in giving it in lease, direct cultivation, etc. according to the ordinances issued [above] for *muazzaf* lands.

[*Commentary* :—If the cultivator dies without heir, the man who administers the land should act in the manner prescribed in the third clause about *kharāj-i-muazzaf*, in giving it in lease or direct cultivation.]

Eighteenth.—In *muqāsema* lands, if any calamity overtakes the crop, remit the revenue to the amount of the injury. And if the calamity happens after reaping the grain or before reaping, gather revenue on the portion that remains safe.

[*Commentary* :—The Emperor seeks the happiness of the ryots. Therefore he strongly orders that no revenue should be demanded for the portion destroyed. But it should be collected for the remnant according to the share of that remnant.]

Farmān of the Emperor Aurangzib-'Ālamgir to Rasik Dās krori in the form of a revenue-guide.

[267, *a*.] Rasik Dās, thrifty and obedient to Islam, hope for Imperial favours and know—

That, all the desires and aims of the Emperor are directed to

the increase of cultivation, and the welfare of the peasantry and the people at large, who are the marvellous creation of and a trust from the Creator (glorified be His name!).

Now the agents of the Imperial court have reported, after inquiry among the officers of the *parganas* of Crown lands and fiefs (*taiul*) of jāgir-holders, that at the beginning of the current year the *āmins* of the *parganas* of the Imperial dominions ascertain the revenue of many of the *mauz'as* and *parganas* from a consideration of the produce (*hāsil*) of the past year and the year preceding it, the area capable of cultivation, the condition and capability of the ryots, and other points. And if the ryots of any village do not agree to this procedure, they fix the revenue at the time of harvesting by [actual] survey or estimated valuation of crop.[1] And in some of the villages, where the cultivators are known to be poor and deficient in capital, they follow the practice of division of crops [*ghalla-bakhshi*] at the rate of $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{5}$, or more or less. And at the end of the year they send to the Imperial record office the account-books (*ṭumār*)[2] of the cash collection of revenue, according to rule and custom, with their own verification (*tasdiq*), and the *Kroris'* acceptance, [267, *b*] and the signatures of the *chaudhuris* and *qānungoes*. But they do not send there the records of the lands of every *pargana* with description of the cultivation and details of the articles forming the autumn and spring harvests,—in such a way as to show what proportion of the crop of last year was actually realised and what proportion fell short, what difference, either increase or decrease, has occurred between the last year and the present, and the number of ryots of every *mauz'a*, distinguishing the lessees, cultivators, and others. [Such papers] would truly exhibit the circumstances of every *mahal*, and the work of the officers there—who, on the occurrence of a decrease in the collection of the *mahal*, after the ascertaining of the revenue had taken place, remit a large amount from the total [standard] revenue on the plea of deficient rainfall, the calamity of chillnip, dearth of grain, or something else.

If they act economically [or with attention to minute details] after inquiring into the true state of the crops and cultivators of every village, and exert themselves to bring all the arable lands under tillage and to increase the cultivation and the total standard revenue, so that the *parganas* may become cultivated and inhabited, the people prosperous, and the revenue increased, then, if any calamity does happen, the abundance of cultivation will prevent any great loss of revenue occurring.

THE EMPEROR ORDERS THAT—

You should inquire into the real circumstances of every village in the *parganas* under your *diwāns* and *āmins*, namely,

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1 *Kankoot*—"Estimate of the ripened corn is called *Koot*." (*Brit. Ind.*, p. 216.)

2 *Tumār*—rent-roll.

what is the extent of the arable land in it? [268, *a*] what proportion of this total is actually under cultivation, and what portion not? What is the amount of the full crop every year? What is the cause of those lands lying uncultivated?

Also find out, what was the system of revenue collection in the reign of Akbar under the diwāni administration of Tudar Mal? Is the amount of the *sāir* cess the same as under the old regulations, or was it increased at His Majesty's accession? How many *mauz'as* are cultivated and how many desolate? What is the cause of the desolation? After inquiring into all these matters, exert yourself to bring all arable lands under tillage, by giving correct agreements (*qaul*) [1] and proper promises, and to increase the first rate crops. Where there are disused wells, try to repair them, and also to dig new ones. And assess their revenue in such a way that the ryots at large may get their dues and the Government revenue may be collected at the right time and no ryot may be oppressed.

And every year after correctly preparing the papers containing the number of the cultivators of every *mauz'a*, [the extent of] the cultivated and uncultivated lands, lands irrigated by wells and by rain [respectively], the higher and lower crops, the preparations for cultivating the arable land for increasing the first-rate crops and bringing under culture the villages which had lain desolate for years,—and what else has been ordered in previous revenue-guides (*dasturu-l-'aml*),—report these details, with the amount of the money collected during the year just completed [268, *b*]. Know this regulation and procedure as established from the beginning of the autumn of the year of the Hare,[2] the 8th year of the reign, and act in this way, and also urge the officers of the *mahals* of the *jāgir-dārs* to act similarly:—

First.—Do not grant private interviews to the *'amils* and *chaudhuris*, but make them attend in the [public] audience-hall. Make yourself personally familiar with the ryots and poor men, who may come to you to state their condition, by admitting them to public and private audiences, so that they may not need the intermediation of others in making their requirements known to you.

Second.—Order the *'amils* that (i) at the beginning of the year they should inquire, village by village, into the number of cultivators and ploughs, and the extent of the area [under tillage]. (ii) If the ryots are in their places, the *'amils* should try to make every one of them exert himself, according to his condition, to increase the sowing and to exceed last year's cultivation; and advancing from inferior to superior cereals they should, to the best of their power, leave no arable land waste. (iii) If any of the peasants runs away, they should ascertain the cause and work

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[1] Tippu Sultan's order: "On the commencement of the year [the *amil*] shall give *cowle* to all the ryots...and encourage them to cultivate the lands." *British India Analysed*, I, 1 and 2.

[2] A Turkish year.

very hard to induce him to return to his former place. (iv) Similarly, use conciliation and reassurances in gathering together cultivators from all sides with praiseworthy diligence. (v) Devise the means by which barren (*banjar*) lands may be brought under cultivation.

Third.—Urge the *āmins* of the *parganas*, that at the beginning of the year, after inquiring into the agricultural assets (*maujudāt-i-mazru'aāt*) [269, *a*] of every tenant, village by village, they should carefully settle the revenue in such a way as to benefit the Government and give ease to the ryots. And send the *daul*[1] of revenue to the Imperial record office without delay.

Fourth.—After settling the revenue, order that the collection of revenue should be begun and the payment demanded at the appointed time, according to the mode agreed upon in every *pargana* for the payment of the instalments of revenue. And you yourself should every week call for reports and urge them not to let any portion of the fixed instalments fall into arrears. If by chance a part of the first instalment remains unrealised, collect it at the time of the second instalment. Leave absolutely no arrears at the third instalment.

Fifth.—Having divided the outstanding arrears into suitable instalments according to the condition and capability of the ryots, urge the *kroris* to collect the instalments as promised [by the ryots], and you should keep yourself informed about the arrangements for collecting them, so that the collection may not fall into abeyance through the fraud or negligence of the *'amils*.

Sixth.—When you yourself go to a village, for learning the true condition of the *parganas*, view the state and appearance of the crops, the capability of the ryots, and the amount of the revenue. If in apportioning [the total revenue among the villagers] justice and correctness have been observed to every individual, fair and good. But if the *chaudhuri* or *muqaddam* or *patwāri* has practised oppression, conciliate the ryots [269, *b*] and give them their dues. Recover the unlawfully appropriated lands (*gunjāish*) from the hands of usurpers. In short, after engaging with honesty and minute attention in ascertaining [the state of things] in the present year and the division (? or details) of the assets, write [to the Emperor] in detail,—so that the true services of the *āmins* and the admirable administration of this wazir [Rasik Dās] may become known [to His Majesty].

Seventh.—Respect the rent-free tenures, *nānkār*[2] and *in'ām*, according to the practice of the department for the administration of Crown lands. Learn what the Government *'amils* have increased (?), namely, how much of the *tankha* of *jagirs* they have left in arrears from the beginning, what portion they have deducted

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[1] *Daul*—"an account of particular agreements with the inferior farmers of the district, attested by the Canongoes; sub rent-roll." (*Brit. Ind.*, p. 222.)

[2] *Nankar*—(*Brit. Ind.*, p. 148). *Enams*—"the meanest and more general gifts of land, bestowed on mendicants and common singers." (*Brit. Ind.*, p. 186.)

on the plea of shortage [of rain] and [natural] calamity. In consideration of these things resume [the unlawfully increased rent-free lands] of the past, and prohibit [them] in future, so that they may bring the *parganas* back to their proper condition. The truth will be reported to the Emperor, and favours will be shown to all according to their devotion.

Eight.—In the cashier's office (*fotakhāna*) order the fotadārs to accept only 'Ālamgiri coins. But if these be not available, they should take the Shah Jahani Rupees current in the bazar, and collect only the *sikka-i-ābwāb*. Do not admit into the *fotakhāna* any coin of short weight which will not pass in the bazar. But when it is found that the collection would be delayed if defective coins are returned, take from the ryots the exact and true discount for changing them into current coins, and immediately so change them.

Ninth.—If, (God forbid!) any calamity [270, *a*] from earth or sky overtakes a *mahal*, strongly urge the *āmins* and *'amils* to watch the standing crops with great care and fidelity; and after inquiring into the sown fields, they should carefully ascertain [the loss] according to the comparative state of the present and past produce (*hast-o-bud*).[1] You should never admit [as valid] any *sarbasta*[2] calamity, the discrimination (*tafriq*) of which depends solely on the reports of the *chaudhuris*, *qanungoes*, *muqaddams*, and *patwāris*. So that all the ryots may attain to their rights and may be saved from misfortune and loss, and usurpers may not usurp [others' rights].

Tenth.—Strongly urge the *āmins*, *'amils*, *chaudhuris*, *qānungoes*, and *mutasaddis*, to abolish *balia* (? or *hālia ?*), exactions (*ākhrājāt*) in excess of revenue, and forbidden *ābwābs*[3] (cesses),—which impair the welfare of the ryots. Take securities from them that they should never exact *balia* or collect the *ābwābs* prohibited and abolished by His Majesty. And you yourself should constantly get information, and if you find anyone doing so and not heeding your prohibition and threat, report the fact to the Emperor, that he may be dismissed from service and another appointed in his place.

Eleventh.—For translating Hindi papers into Persian, inquire into the rateable assessment and apportionment (*bāchh-o-bihri*)[4] of the revenue, exactions (*ākhrājāt*), and customary perquisites

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[1] *Hastabood jama*—"Comparative account of the former and actual sources of revenue, showing the total increased valuation of the lands, the variations produced by casualties, new appropriations, &c." (p. 220).

[2] سر بسنی exemption from payment. Hence the word in the text means entitled to remission of revenue. *Sarbasta* in the sense of secret does not yield so good a sense.

[3] *Abwabs*—"Imposts levied under the general head of Sair" (*Brit. Ind.*, p. 168); they are enumerated in pp. 164-166. "Aurangzeb abolished 70 of these *abwabs*" (p. 168).

[4] *Bachh*—Distribution of an aggregate sum among a number of individuals (Wilson, p. 42, *b*.). *Behri*—Proportionate rate (Wilson, p. 70, *b*.).

(*rasumāt*)[1] name by name. As for whatever is found to have been taken from the peasants on any account whatever, after taking account of the payments (*wāsilāt*) into the *fotakhāna*, the balance should be written as appropriated by the *āmin*, *'amil*, *zemindārs* and others. name by name. And, as far as possible [270, *b*.] collect and translate the rough records (*kāghaz-i-khām*) of all the villages of the *pargana*. If owing to the absence of the *patwari* or any other cause, the papers of certain *mauz'as* cannot be got, estimate this portion from the total produce of the villages [taken collectively], and enter it in the *tumār*. After the *tumār* has been drawn up, if it has been written according to the established system, the *diwān* ought to keep it. He should demand the refunding of that portion of the total gains of *'amils*, *chaudhuries*, *qānungoes*, *muqaddams*, and *patwāris*, which they have taken in excess of their established perquisites (*rasum-i-muqarrar*).

Twelfth.—Report the names of those among the *āmins* and *kroris* of the *jāgirdārs*, who have served with uprightness and devotion. and by following the established rules in every matter have proved themselves good officers,—so that as the result they may be rewarded according to their attention to the gain of the State and their honesty. But if any have acted in the opposite manner, report the fact to the Emperor, that they may be dismissed from the service, put on their defence and explanation [of their conduct], and receive the punishment of their irregular acts.

Thirteenth.—With great insistence gather together the papers of the records (*sar-i-rishta*) at the right time. In the *mahal* in which you stay, every day secure from the officers the daily account of the collection of revenue and cess and prices-current, and from the other *paryanas* the daily account of the collection of revenue and cash (*maujudāt*) every fortnight, and the balance [271, *a*] in the treasuries of *fotadārs* and the *jam'a wāsil bāqi* every month, and the *tumār* of the total revenue and the *jam'a bandi*[2] and the incomes and expenditures of the treasuries of the *fotadārs* season by season. After looking through these papers demand the refunding of whatever has been spent above the amount allowed (? or spent without being accounted for), and then send them to the Imperial record office. Do not leave the papers of the spring harvest uncollected up to the autumn harvest.

[271, *b*.] *Fourteenth.*—When an *āmin* or *'amil* or *fotadār* is dismissed from service, promptly demand his papers from him and bring him to a reckoning. According to the rules of the *diwān's* department, enter as liable to recovery the *ābwābs* that ought to be resumed as the result of this auditing. Send the papers with the records of the *ābwābs* recovered from dismissed *'amils*, to the Imperial *cutchery*, in order that the auditing of the man's papers may be finished.

Fifteenth.—Draw up the *diwāni* papers according to the established rules season by season, affix to them your seal [in proof] of verification, and send them to the Imperial record office.

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1 *Russooms*—"Customs or commission." (*Brit. Ind.*, p. 149.)
2 *Jamabandi*—"Annual settlement of the revenue." (*Brit. Ind.*, p. 174.)

[112, b.] نقل فرمان حضرت محي‌الدين محمد اورنگ زيب
عالمگير بادشاه غازي في سنه ۱۰۷۹ هزار و هفتاد
و نه هجري در باب گرفتن خراج

كفايت شعار محمد هاشم بعنايت بادشاهي اميدوار بوده بداند كه چون بميامن توفيقات و تائيدات ربّ الارض والسّموات - عظمت الاءهٗ و عمّت نعماهٗ - همواره عنانِ عزيمتِ والا همت بموجب آيه كريمه ان الله يامر بالعدل و الاحسان معطوف است و همتِ عالي نهمت به تمشيتِ امور و تنسيق مهام بر وفق شريعت [113, a.] خيرالانام - عليه و على آله و اصحابه افضل الصلوٰة والسلام - مصروف و پيوسته مصدوقهٗ بالعدل قامت السموات و الارض منظور نظر از عبادات و تعظيم امرِ پروردگار و شفقت و مرحمت بر كبار و صغار پيش نهادِ خاطر باهر الانوار است - بدابرين درين [ايام] خجسته فرجام فرمانِ عالي شان عدالت عنوان شرف نفاذ يافت كه متصديان مهمات حال و استقبال و عمالِ ممالك محروسهٗ هندوستان از كران تاكرانِ خراج وغيرهٗ محالِ آن باندازه و طريقه - كه در شرع انوار و ملت حنيفهٗ ازهر مقرر گرديده و در ضمن اين منشور a بفضل آنچنانچه از روايات صحيحهٗ معتمده مستفاد ميگردد و منظور است - به تحصيل رسانند - و هر سال بريلغ مجدد بطلبند - و تخلف و تجاوز را موجبِ نكالِ [113, b.] اخرت و دنيا شمارند *

اول بايد كه با رعايا مراتب رفق مرعي دارند - و تفقدِ احوال آنها نمايند - و به حسنِ تدبير و حكمت عملي سعي كنند - كه بطيبِ نفس و خوشدلي در تكثير زراعت كوشش نمايند كه هرچه قابل زراعت شود مزروع سازند *

دوم از ابتدائي سال بر احوال هر يكے از ارباب زراعت بحسب مقدور اطلاع حاصل كنند - كه درپي زراعت اند يا دست ازان كشيده اند ؟ - و اگر قدرت بر زراعت دارند بترغيب و دلاسا پيش آيند * و اگر از بعضے امور رعايت خواهند

(a) Text بفصل

رعایت نمایند * اگر بعد تفحص ظاهر شود که با وجود قدرتِ زراعت و آب باري دست از زراعت باز داشته اند - باید که آنها را تاکید و تهدید نمایند و بزجر و ضرب پیش آیند * و در خراج موظف بارباب زمین معلوم نمایند [115, *a.*] که خراج از انها گرفته خواهد شد زراعت میکنند یا نه - و اگر معلوم کنند که ارباب زراعت در تهیّهٔ اسبابِ زراعت درمانده اند - زري بطریقِ تقاوی از سرکار دهند و ضامن بگیرند *

سیوم در خراج موظف - اگر اربابِ زمین از تهیهٔ اسباب زراعت عاجز و درمانده باشند - یا زمین را معطل گذاشته گریخته بروند - آنزمین را بقصد اجاره یا [b] زراعت بدیگري بدهند - و قدر خراج از اجاره [گیر] در صورتِ اجاره و از حصّهٔ مالك در صورتِ مزارعت ستانند و تتمه اگر بماند بمالکش رسانند * یا شخص را قایم مقام مالك سازند - تا زراعت نموده خراج را ادا نماید و تتمه را خود متصرف شود * و هرگاه اربابِ زمین قدرتِ زراعت بهم رساند زمینِ آنها واپس بدهند * اگر زمین را [115, *b.*] شخصي معطل گذاشته گریخته باشد باجاره ندهند - بعد منقضي آن سال در سال دیگر باجاره دهند *

چهارم بر قطعاتِ زمینِ افتاده که بر زراعت باز نمي آید مطلع شوند * اگر از جملهٔ شوارع و طرق است داخل بنایع شهر و قریه نمایند - که کسی انرا مزروع نسازد * و اگر غیر آن زمین ملاحظه نمایند و اگر درآن مابقيِ زراعت بود - [که] ممتنع الفلاح باشد - بعلت خراج آنزمین مزاحم نشوند * و اگر در آن مابقي ممکن الفلاح بود یا در اصل بایر بود - بر هر دو تقدیر اگر آن زمین مملوکست و مالکش حاضر و قادر بر زراعت باشد - مالك را تاکید کنند که مزروع سازد * و اگر آنزمین مملوک نیست یا مالکش مجهولست آنرا بکسے که قادر بر احیا باشد بدهند تا احیا نماید * پس اگر اجاره گیر مسلمان باشد وزمینِ مذکور [117, *a.*] قریب اراضي عشري بود - بر او عشر مقرر نمایند * و اگر قریب اراضي خراجي بود - یا صحي کافر باشد - مطلقا بر او خراج وضع نمایند * و در صورتي که خراج نیاید بنابر تقاضایِ وقت چیزي بر بیگه بالمقطع - که انرا خراج مقطعت گویند - وضع کنند - یا حصهٔ معین از محصول نصف که انرا خراج مقاسمه نامند مقرر سازند * اگر مالکش معلوم

(b) Text و یا

بود لاکن بغایت عاجز از زراعت باشد - اگر دران زمین قبل ازین خراج مقاسمه باشد موافق حکمي که مي آید بعمل آورند * و اگر غیر خراج مقاسمه باشد یا زراعت نشود بعلتِ عشر یا خراج مزاحم نشوند لاکن در صورت عجز تقاوي داده بر زراعت مشغول سازند *

پنجم قطعهٔ زمین که بادیه [باشد] اگر مالکش معلوم باشد باو وا گذارند دیگرے را دران [117, b.] دخل ندهند * اگر مالك آن معلوم نباشد و احتمالِ عودات دران زمین نبود - به مقتضای مصلحت هرکرا لایق پرداخت آنزمین دانند باو بدهند - و هرکه آنرا صالح زراعت کند او را مالك رقبهٔ آنزمین دانند - و از او واپس نستانند * و اگر عودات اجناس دران زمین باشد از امرے که مانع عودات دران زمین بود مانع آیند - و در انتفاع آنزمین مزارعت وغیرها منع نمایند - وهیچ کس را دستِ تصرف دران ندهند و مالک ندانند * اگر قطعهٔ زمین بادیه دربست از c سببے انتقال است و خلاف غیر ان از سببے دیگر افتاد - تازمانے که پیش ازین تعلق اوست متعلق او دانند و دیگرے را دخل ندهند *

ششم درجائے که بر مزروعات عشر یا خراج مقرر نباشد - آنچه موافق شرع مقرر باید نمود نمایند * و در صورت خراج آنقدر وضع کنند که [119, a.] از گرفتن d آن رعایا از پا نیفتند - و هیچ وجه از نصف بر نگذارند هرچند توانائے آن زیاده باشد * و در جای که مقرر باشد همان مقرري بگیرند - بشرطی که در صورتِ خراج زیاده از نصف نباشد که از گرفتن [آن] رعایا از پا نیفتند * او الا خراج سابق را کم کرده هرچه موافقِ طاقت دانند مقرر نمایند - اگر دران گنجایش زیاده از مقرري باشد زیاده بگیرند *

هفتم تبدیل خراج موظف بمقاسمه و مقاسمه بموظف اگر رعایا بآن رضامند باشد بکنند و الا نکنند *

هشتم وقت طلبِ خراجِ موظف رسیدنِ هر جنسِ غلّه بحدّ دروست * پس هر جنسے که بحدِّ درو برسد حصّهٔ خراج که برابر آن جنس بود بگیرند *

نهم در خراج موظف [اگر در] بعض زراعت آفت غیر ممکنهٔ e الا حذار

(c) Text سبب (d) Text از زمین آن (e) Text بمکیده الاضرار

برسد - باید که نیک وا رسیده از قرار حق و نفس الامر *f* بر مقدار آفت مجری دهند * و در اخذ [119, *b.*] محصول مابقي نوعي سلوک نمایند که نصف سالم برعایا برسد *

دهم در خراج موظف هر که زمین خود را باجود قدرت بر زراعت و عدم مانع معطل دارد - خراج در بعضی [زمین] دیگر بگیرند * و در بعضی ده بآب در آید *g* یا آب باران منقطع شود [یا] با زراعت پیش از بریدن آفت غیر *h* ممکن الاحذار بحدی برسد که جنس غله بدستش نیامد - و دران سال آنقدر مدّت نمانده که پیش از آمدن سال دیگر مرتبهٔ ثانیه زراعت کند - خراج ساقط دانند * و اگر بعد از بریدن آفت برسد - خواه ممکن *h* الاحذار مثل خوردن دواب وغیره یا [بعد] ازان مدت مذکوره مانده است - خراج بستانند *

یازدهم اگر مالک زمین خراج موظف از زمین خود زراعت نموده پیش از ادائی خراج آنسال فوت شود و محصول زراعت بدست ورثهٔ متوفیٔ مذکور آید [121, *a.*] خراج آن از ورثه بگیرند * و اگر متوفیٔ مذکور پیش از انکه زراعت کند فوت شده و درانسال آنقدر [مدت] بدست نمانده باشد هیچ نستانند *

دوازدهم در [خراج] موظف - اگر مالک زمین خود را باجاره یا عاریه دهد [و] مستاجر و مستعیر دران زراعت کند - وظیفهٔ آن از مالک زمین بگیرند * و اگر آنها باغ نمایند خراج از مستاجر و مستعیر بگیرند * اگر زمین خراجي را کسے قبض نموده منکر باشد [و] مالک گواهان *i* داشته باشد - اگر غاصب زراعت کرده باشد خراج از غاصب بگیرند - و اگر زراعت نکرده باشد از هیچ یکے نستانند * و اگر غاصب مقر نباشد و مالک گواهان نداشته باشد خراج از مالک ستانند - و در صورت رهن موافق حکم غصب بعمل آرند * و اگر مرتهن بی اذن راهن دران زراعت کرده [121, *b.*] باشد [خراج از مرتهن بگیرند] *

سیزدهم در خراج موظف - اگر شخصے *j* زمین خراجي خود را که

(*f*) Text مقدار از افت
(*g*) Text باب باران
(*h*) Text بمکیده الاضرار
(*i*) Text نداشته
(*j*) Text ز زمین

دران زراعت میشود درمیان سال بفروشد - اگر یک فصله است و مشتري آنرا قبض نموده از بقیه سال مدتے در یافته است *k* [که] تواند دران سال زراعت کرد - کسے مانع زراعت نیست - خراج آن از مشتري و الا از بایع ستانند * و اگر دو فصله است [و] یک فصل را بایع دریافته و یک را مشتري - خراج مقرري بر هر دو قسمت نمایند * و اگر دران زمین زراعت باشد که بحدّ درو رسیده - خراج آن از بایع ستانند *

چهاردهم در [خراج] موظف - اگر کسے زمین خود را خانه کند خراج آن بدستور سابق بدهد - و هم چنین اگر درآن زمین اشجار غیر مثمر نشانیده باشد * [واگر] زمین زرعي را - که در آن وظیفه زراعت بود- [123, *a.*] باغ کرده و اشجار مثمر در تمام وظیفه بلا فرجه نشاند - دو روپیه سه پاؤ بالا که وظیفهٔ ارتفاع باغست بگیرند - هر چند ان اشجار ثمر نداده باشد * مگر درخت انگور و بادام که ثمر ندهد بدستور سابق بگیرند - و بعد از دادن ثمر دو روپیه سه پاو بالا بگیرند - بشرطی که محصول یک بیگهٔ شرعي - که عبارت از چهل و پنج گز شاهجهاني در چهل و پنج گز مذکور است - که بگز شرعي شصت در شصت میشود- به پنج و نیم روپیه [11] ربع ان برسد * و الا موافق نصف محصول بگیرند * اگر قیمت محصول کم از پاو روپیه - که یک سیر و پنج سیر شاه جهاني از غله باشد - از ان کم نگیرند [؟] * اگر کافری زمین خود را بدست مسلمان فروخت باوجودے که مسلمان باشد خراج بگیرند *

پانزدهم اگر کسے زمین خود را مقبره [123, *b.*] یا سرای وقفي نموده - خراج آن ساقط دانند *

شانزدهم *m* در خراج مقاسمه - هر که زمین خراجي را مالک نبود - اگر کافر باشد یا مسلم یا خریده باشد یا گرو باشد - *n* کفایت هر چه دران زمین پیدا شود بر او باشد - حصه تعلق که مقرر باشد [از او] بگیرند - بشرطی که زیاده از نصف نباشد و الا نه کم از ثالث - و اگر کم از ثالث باشد زیاده نمایند هرچه مناسب دانند *

(*k*) Text یافته است اگر تواند دران سال الخ (*n*) Text از خراج کفایت برو باشد باذن هرچه دران زمین پیدا شود حصه تعلق (*m*) Text که مقرر باشد بگیرند

هفدهم اگر مالک زمین مقاسمه میرود و وارث نگذارد - دران زمین بدادن آن باجاره یا بمزارعت وغیره چنانچه بموظف گذشت بعمل آرند *

p هژدهم در مقاسمه - اگر زراعت را آفت رسد هر قدر که ضایع شود خراج آن نگیرند • و اگر بعد از بریدن غله آفت درسد یا پیش از بریدن هر قدر که بماند خراج بگیرند •

p) Text هجدهم

تمام شد •

—o—

Commentary on the *farmān* to Muḥammad Hāshim.

[113, *b*. margin] مضمون صدر صرف تمهید مقدمه [و] تهدید از جناب کبریا برائے اجرائے امر سلطاني وجهت عدل بعمال و شفقت و مرحمت و رفاهیت رعایا در تحصیل خراج وغیره مطابق شرع شریف *

در دفعه اولی انچه مندرج است اراده سلطان عادل اینست - که مراتب رفق و حسن تدبیر که باعث تکثیر *a* زراعتست عمل نمایند * و آن اینست که بهیچ نوع اسم و رسم از قرار *b* بسته و نرخ دامي و درمي زیاده نگیرند * و از نوعی بعنوان از *c* احدے بر رعایا ظلم وتعدي نشود - و باید [که] اهتمام کار انجا محافظ و معدّل این امور باشد *

[114, *a*.] دفعه دوم دلیلست برین که مزارعان صرف برائے همین مامورند که زراعت کرده مالواجب سرکار ادا نمایند و حق زراعت خود را بگیرند - و اگر از اسباب زراعت درمانده باشد تقاوي - که از سرکار حاکم مي یابند - نظر برین است که چون حاکم مالکست باید - که کاسب زمین خود را هرگاه مقدور نداشته باشد اسباب کسب بدهد - و نیز ارادهٔ سلطاني ارادهٔ *d* اولست * و تهدید و ضرب و زجر نظر برین است که هرگاه حاکم مالک است - در هر صورت رعایت و عدل منظور داشته باشد - پس ضرور است که مزارع هم با آئین خود بتکثیر زراعت کوشش وجهد بلیغ نمایند که آثار آبادے هر روز بیشتر از پیشتر رو دهد * این معني باعث کفایت سرکار و رفاهیت رعایا است *

[114, *b*.] دفعه سیوم — در باب *e* گرفتن خراج - آنچه از اجاره دادن ومزارع برائے زراعت حواله نمودن و قدرے خراج آن از اجاره [گیر] و از حصه

(*a*) Text زراعت عمل
(*b*) Text سه
(*c*) Text عبدے
(*d*) Text اولیت
(*e*) Text در باب رعایا گرفتن

مالک درمزارعت و نیمه بمالک یعنی بمزارع سابق زمین *f* رساننده [مندرجست] - لفظ مالک که درینجا مندرج است بآن معنی نیست که این زمین ملکِ اوست - بلکه مالک باینمعنی که مالک مزارعت در آن زمین است - چرا که اگر مالک بمعني صاحب ملک باشد از عجز و درماندگي اسباب زراعت نخواهد گریخت - بلکه ملک خود را فروخته خود را بدو صورت نجات مي تواند داد - یکی اینکه مالواجب سرکار ذمهٔ مشتري میشود - دوم وجهٔ قیمت ملکِ خود برای رفع مایحتاج بکار تواند آورد * و این که مندرج است شخصی را قایم مقام مالک سازند - در اصل قایم مقامِ مالک سیواے وارث او نمیشود- و اینمعني مخصوص ملکیت است * پس درینجا که قایم مقام مندرجست بهمان معنی است که قایم مقام [مالک] مزارعت * مگر بشق دیگر کسی که زمین غیر حاصل بایر را باذن حاکم بصرف زرِ مملوک خود ابادان سازد و خراج سلطاني بران *g* مقرر داده بسرکار میرسانیده باشد - ان شخص حقِ خدمتِ رعایا بر زمینِ مزروع خود دارد - چرا که باعث احیائ زمین اوست - و اصل مالک همانست که قایم مقام مالک میسازد یعني حاکم * مثلی است مشهور - هر که شمشیر زند سکّه بنامش خوانند * و این که مندرج است که نیمه بمالکش رسانند و بعد ازان تا یکسال بدیگرے اجاره ندهند - نظر برین که در خراجِ موظف قید حاصل وغیر حاصل نیست - در هر صورت باید مزارع خراج نقد ادا نماید * بنابر حاکم را رعایت و عدل منظور است که تا سال رعایتاً انتظار او نمایند - و در صورتِ مزارعت و اجاره از خراجِ سلطاني *h* هرچه زیاده بشود باو بدهند *

[116, *a.*] چهارم — نسخهٔ زمین از جمله شوارع و در اصل بایر و مجهول المالک و مالکش بغایت عاجز از زراعت وغیره مراتب - بهر تقدیر بمعني مالک همان معني اولست * و نیز احتمال مملوک بسق دیگر میتواند شد - چنانچه در صدر مذکور یافت - و در مالک بودن حاکم دلایلِ بسیار اظهر من الشمس و ابین من الامس است - نظر بر طول کلام منضبط نشد *

[116, *b.*] آنچه در دفعه پنجم درباب زمین بادیه که مالکش موجود باشد باو حواله نمایند - والا موجب مصلحت کسی که لایق باشد باو بدهند که صالح زراعت کند او را مالک رقبه دانند - و از او باز نستانند - اگر در او احتمال عودات نباشد

(*f*) Emendation رسانیدن (*g*) Text تقرر

(*h*) Text خراج سلطاني نیمه بشود

یا دیگر مراتبات وغیرہ مندرج است * لفظِ عودات درینجا دو معني دارد - یکے در زمین که احتمال کان باشد - دوم عود یعنے باز آمدن آن شخص بران زمین * وشق دیگر که در صدر مندرج شدہ است - درین دفعه ظاهر و عیان است * هر که زمین را صالح زراعت کند مالک رقبه او را دانند - همان معنے است که زمین مایر لا حاصل را باذن حاکم آباد کردہ کفایت سرکار نمودہ است - البته حق خدمت با اوست - بنابر [آن] حکم سلطاني باین اجرا یافته - هر که زمین را صالح زراعت کند مالک رقبه دانند و از او واپس نستانند * پس ظاهر است هر که برخلاف این خواهد بود - او را دران زمین حق نخواهد بود - و در انتفاعِ آن زمین مزارعت وغیرہ که مندرجست - یعنے شخص دیگر را که بعد ازین ادعاي ملکیت پیدا کند - او را در انتفاع آن زمین - که از وجه مزارعت باشد یا میواي آن مثل باغ یا تالاب وغیرہ - تصرف ندهند و مالک ندانند - زیرا که این زمین از محصول افتادہ بود - درین صورت محي آن محق است - دیگرے را حق نخواهد بود * و اگر قطعه زمین بادیه وغیرہ که مندرجست - پس قطعه زمین بادیه بتمامیه منتقل گردد بشخص دیگر - و از عدم بودن مالک آن یا حقیقتَ احیا [از] افتادگي زمین و عدم حصولِ محصول سبب این شخص - پس تا زمانے که آنزمین انتقالي از حاصل نافتادہ بود - بشخصی که اول تعلق داشت و از انتقال او باین شخص منتقل گردیده - وجهٔ محصول آنرا متعلق بهمان شخص بدانند - از منتقل الیه علاقه نیست - چه از زمانے که بجانب این انتقال نمودہ متعلق اینخواهد بود *

[118, *a*.] جواب در دفعه ششم - منظور سلطان [رعیت] پرور اینست - که خراج همانقدر بر رعایا مقرر نمایند که رعایا بسبب مالگذاري از پا نیفتند - چرا که زمین که مالک آن سلطان است آبادئي او از رعایاست * هرگاه رعایا برجا نباشند و از پا بیفتند یعنے بسببِ زیادہ طلبي و ظلم عامل خراب شوند - آیندہ آبادی و صورتِ بهبودِ آبادئي زراعت چه قسم میتواند بود ؟ لهذا درین دفعه تاکیداست * و این که در فقرهٔ اخر مندرجست - که اگر دران گنجایش از مقرري زیادہ باشد زیادہ بگیرند * این فقرہ نقیضِ حکمِ فقرهٔ اولی در همین دفعه است - شاید سهوء کاتب بودہ باشد - چنان بدریافت که این فقرہ بنابر تاکید است مي باید که بگیرند باشد * زیرا که در اول معنے مطلق میکند - هر چند توانائي زیادہ باشد از نصف زیادہ نگیرند * باز درینجا حکم میکند زیادہ از مقررے نگیرند

این معنے ز تقویت حکم اولاست - بلکه میتواند شد که تکرار حکم بنابر تاکید بلیغ است *

جواب در دفعه هفتم — حکمِ تبدیلِ خراج از یکدیگر در صورتِ رضامندئے رعایاست بنابر رفاهیت آنها *

جواب در دفعه هشتم — حکم [گرفتن] خراج در وقتِ رسیدنِ غله بحدِّ درو - مراد این است که هرگاه خراج در وقتِ درو طلب خواهد شد رعایا بلا تصدیع بقدر مالواجب سرکار زراعت را بفروش رسانیده ادائے خراجِ سلطان خواهد نمود * و اگر پیش ازین طلب شود باعثِ تصدیع و ضیقِ رعایاست * بنابر مطلبِ سلطان بر رفاهیت آنها *

[118, *b*.] جواب در دفعه نهم - یعنے اگر در زمین خراج موظف مقرر باشد و در بعضے زراعتِ آن زمین آفت برسد که بالکل تباه نگردد - پس مي باید که آنرا تحقیق نموده بقدرے که تباه شده باشد مجرا دهند - و قدرے [که] باقي مانده است آنقدر محصول از آن بگیرند که برائے رعیت نصف سالم بماند - مثلاً در یک بیگهه زمین ده من جنس پیدا میشد - بسببِ افت شش من باقي ماند - و نصفِ سالمِ این پنج منست - مي باید که یکمن بگیرند که نصف سالم آن [l] پنج منِ بر رعیت باقي باشد *

جواب در دفعه دهم — یعنے اگر شخصی زمین دارد که خراج موظف دران مقرر است و او قادر بر زراعت است و هیچ مانع برای زراعت نیست - معطل دارد - پس خراج آنزمین را در زراعتِ دیگرِ که از آن شخص باشد بگیرند - زیرا که با وصفِ بودنِ قدرت و عدم مانع معطل داشته است * و اگر در بعضے زراعت آنشخص سیلابي رسیده باشد یا آب باران - که برائے رسیدن جنسِ زراعت بسته بود - تمام شده باشد - و زراعت ضایع شده باشد - یا درمیان بعضے زراعتِ آن شخص پیش از آن که بحد پختگي رسد و بریده گردد چندان آفت غیر ممکن [m] الاحذار رسد - که جنس غله حاصل نشود و نیز امکانِ زراعت ثاني در عرضِ مدتِ آنسال نمانده باشد - خراج نگیرند * و اگر درهمان بعضے زراعتِ آن شخص آفتِ ممکن الاحذار بعد بریدنِ محصول رسد - یا این که پیش از بریدنِ محصول آفت رسیده باشد لاکن امکانِ زراعتِ ثاني در عرضِ مدتِ آنسال باشد -

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(*j*) Text تفویض

(*k*) تصدیق

(*l*) Text پنج منست بر رعیت

(*m*) Text الاضرار everywhere.

محصول بگیرند * زیرا که بعد از بریدن غله از عدم احتیاط آنشخص آفت رسیده است - و همچنین اگر چه[n] پیش از بریدن آفت رسیده بود - اما ایام زراعت دیگر باقي بود - از سبب تغافل این شخص بعمل رسید - خراج گرفتن از او لازم آید *

[120, *a*.] جواب [دردفعه] یازدهم - آنچه از فوت مالک زمین و گرفتن خراج از ورثهٔ او و نگرفتن خراج از ورثه [اگر] پیش از آن که زراعت کند فوت کرده باشد - ظاهر است عدل صریح است * چرا که مالک زمین که في الحقیقت مالک زراعت است پیش از آن که زراعت کند فوت کرده باشد - از ورثهٔ او بی این که از ترکهٔ او چیزی بازیها برسد خراج گرفتن بعید از عدل است - زیرا که مالک زمین حاکم است و مالک زراعت که متوفی بوده باشد پیش از زراعت فوت کرده است و بدست ورثهٔ او هیچ چیزی و جنسی که باعث خراجست نیامده - که از آنها خراج ستانند * لهذا لازم است که هیچ نگیرند *

[120, *b*.] جواب [در دفعه] دوازدهم - اینحکم بدین دو طور مي باید - و الا معني نمي شود - و در خراج موظف اگر مالک زمین خود را باجاره یا عاریه دهد و مستاجر و مستعیر دران زراعت کند وظیفهٔ آن از مالک زمین بگیرند - و اگر آنها باغ نمایند خراج از مستاجر و مستعیر بگیرند - زیراکه مستاجر و مستعیر در آن زمین باغ نموده اند - و اگر زمین خراجي را کسے قبض نموده منکر باشد [و] مالک گواهان داشته باشد - اگر غاصب زراعت کرده باشد خراج از غاصب بگیرند - و اگر زراعت نکرده باشد از هیچ یکے نستانند - اگر غاصب مقر نباشد و مالک گواه نداشته باشد خراج از مالک ستانند * یکطور معنے اینست * و طور دوم این که - مالک گواهان داشته باشد خراج از مالک بگیرند - یعنے غاصب مقر نیست و مالک گواهان مزارعت خود در آن دارد - خراج از مالک ستانند * در صورت رهن موافق حکم غصب بعمل آرند - اگر مرتهن بی اذن راهن دران زراعت کرده باشد - زیرا که اگر مرتهن باذن راهن زراعت کرده باشد خراج بر راهن لازم مي آید - چرا که کردن زراعت نیز شامل رهن شد * اگر بی اذن راهن زراعت کرد برو خراج لازم خواهد آمد - چرا که صرف زمین در رهن اوست نه زراعت *

[122, *a*.] جواب [در دفعه] سیزدهم - هرگاه کسے بخواهد زمین خود را یعنے

(n) پیش ازین از بریدن

مزارعت زمین خود را بفروشد - اگر درمیانِ سال مدتے مشتري یافته است که زراعت در آنزمین تواند کرد - خرج از مشتري بگیرند * و اگر دو فصل در زمین است یکے را بایع و یکے را مشتري در یافته است - خراج را دو قسمت کرده از طرفین بگیرند * و اگر در آن زمین زراعت بود که بعدِ درو رسیده است خراج از بایع ستانند - زیرا که زراعت که بعدِ درو رسیده است هرگاه بایع با وصفِ علمِ این فروخته است - البته قیمتِ زراعت رسیدن بعدِ درو گرفته است - لازم p آید که خراج از بایع ستانند *

[122,*b*.] جواب در دفعه چهاردهم - یعنے اگر شخصی مالک زمین باشد که دران خراج موظف مقرراست وبران q زمین خانه بنا کند - یا درختهائے بے میوه نشاند - در خراجِ آن تفاوت نکند - بدستورِ سابق وظیفه که مقرر است بگیرند * و اگر بر زمینے که زراعت میکند [و] وظیفهٔ زراعت از آن میدهد - باغي سازد و درختهائے میوه دار بلا تفاوت نشاند که محل زراعت نماند - دو روپیه و دوازده آنه که حاصلِ باغ مقرر است بگیرند - اگر چه هنوز آن درختها میوه نداشته باشد - مگر درختهائے انگور و بادام که تا حالت بي میوگي وظیفه گرفته شود و بعد [از] دادنِ میوه حاصلِ باغ - لاکن این حاصلِ باغ - که دو روپیه و دوازده آنه باشد - بشرطی که ربع یک بیگهه شرعی همگے معهٔ حصهٔ مالک تا پنجروپیه هشت آنه باشد - در صورتے که باین ربع نباشد - پس حاصلِ باغ موافقِ حصهٔ نصف بگیرند * و اگر قیمت محصول موافقِ حصهٔ نصف کم از پاو روپیه باشد که بحسابِ غله در پنج سیر شاهجهاني یک سیر یافتند - ازین کمتر نکنند * و اگر کافری زمین خود را بدستِ مسلمانے فروشد از آن مسلمان خراج بگیرند - زیرا که در اصل مالک او نبود *

[124, *a*.] جواب در دفعه پانزدهم — چون مقبره و سرا وقف نمودن امر احسن است لهذا سلطان نظر بر رفاهیت و افادهٔ حسنه امتناعِ خراج از او نمودند - لازم که خراج نگیرند *

جواب در دفعه شانزدهم — یعنے در خراج مقاسمه - شخصی که در اصل آنزمین ازو نباشد یا گرو باشد - این شخص اگر کافر باشد یا مسلم - انتفاعِ آن زمین برائے او خواهد بود - بشرطی که در رهن اش از راهن داشته باشد * پس حصّهٔ متعلقهٔ آنزمین آنچه از پیشتر مقرر باشد از همان شخص بگیرند -

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(*p*) Text آمد

(*q*) Text زمین که خانه

لاکن مي باید که این حصهٔ زیادة از نصف و کم از ثلث نباشد * در صورتِ زیادة از نصف کم - و در صورتِ کم از ثلث زیادة [۲] - بقدرِ مناسب نمایند *

جواب در دفعه هفدهم — اگر مزارع بمیرد و وارث نگذارد - در آن زمین شخصے که اهتمامِ اوست بدادنِ إجاره و بمزارعت - بنوعی که بدفعهٔ سیوم بخراجِ موظف گذشت - بعمل آرند *

جواب در دفعه هژدهم — سلطان را منظور رفاهیتِ رعایا است - لهذا حکمِ تاکید است که هر قدر ضایع شود خراج نگیرند - هر قدرِ باقي بماند موافق حصّهٔ همان بقیه خراج ستانند *

(۲) Text قدرت

[267,a]. نقل فرمان بادشاه اورنگزیب عالمگیر بنام رشکداس کروري بطریق دستورالعمل *

آنکه کفایت شعار مطیع الاسلام رشکداس بمرحمت بادشاهانه امیدوار بوده بداند - از آنجا که همگی همت و الا وتمامیٔ نهمت فلک امتلا بر ازدیاد ابادانی و استرفاهٔ حال کافهٔ رعایا و عامهٔ برایا - که بدایعِ و دایعِ حضرت آفریدگار جل ذکره اند - مصروفست - و درینولا بعد استفسار عمالِ پرگنات خالصه‌شریفه وتیول [جاگیر] داران از کارپردازان پیشگاهٔ خلافت وجهانباني بموقف عرضِ اشرف واعلی رسیده - که اعمال امنائي پرگناتِ ممالکِ محروسه جمع اکثري از مواضعات a پرگنات را در اغاز سال نظر بر حاصل سالِ کامل و سال متصل و رقبهٔ قابل زراعت و حالت b و استطاعت رعایا ودیگر خصوصات داشته - مشخص مینمایند - و اگر رعیت بعضی از دهات باین عمل راضي نشود جمع آنرا هنگام رسیدن مزروعات بعمل جریب c یا کنکوت میدهند - و در برخي از قریات که مزروعان و کشاورزان انجا را پریشان حال و کم بضاعت میدانند - عمل غله بخشے بقرار نصف یا سیوم حصّه یا پنج دو یا کمتر و بیشتر مقرر میسازند - و در آخر سال طوامیر جمع نقدے موافق ضابطه و معمول بتصدیق خود [و] قبول[267, b.] کروریان ودستخط چودهریان و قانونگویان بدفتر خانه معلی ارسال مي دارند *لاکن سر رشته اراضي هر پرگنه از پرگنات با قید مزروعهٔ و تفصیل اجناس خریف و ربیع

(a) A. و پرگنات

(b) A. omits و

(c) A. یا کنکوت — B. یا کنکوت

بدین نمط که در سال گذشته چه قدر جنس کامل بود و ناقص چند ؟ و در سالِ حال نسبت بگذشته بزیادتي یا کمي چه تفاوت شده ؟ و تعداد مزارعانِ هر موضع بتفریقِ مستاجران و رعایا وغیره بدفتر خانهٔ معلی نمیرسد * کیفیت هر محال و پرداخت متصدیانِ انجا - d که پس از تشخیص جمع بر تقدیر وقوع کمي در حاصل آن محال - کمیٔ باران یا آفتِ سرمازدگي یا ارزاني غله یا غیر آنرا دست آویز نموده - مبلغي از جمله جمع مجرا میدهند - از قرار واقعي ظاهر شود * اگر آنها بحقیقت مزارعان و مزروعات هر قریه وا رسیده از راهٔ جزورسي عمل نمایند و سعي در مزروع ساختن اراضیٔ لایقِ زراعت و افزوني کشت و کار و جمع کامل بکار برند - که پرگنات آباد و معمور و رعایا مرفه الحال خواهد شد و زیادتي در محصول پدید خواهد آمد - واگر دربنصورت آفتي از آفات رو دهد از راهٔ کثرتِ زراعت نقصانِ فاحش در حاصل راه نخواهد یافت *

حکم جهان مطاع ء لم مطیع شرف صدور مي پیوندد - که حقیقت هر دیه از دیهات پرگنات متعلق دیواني و اميني خویش وا رسد - که اراضیٔ لایق زراعت درآن چه قدر است [268, a.] و از ه انجمله مزروع f چه مقدار و نا مزروع چند ؟ - جنس کامل هر سال چه مقدار میشود ؟ و موجبِ مزروع نشدنِ اراضیٔ مذکور چیست ؟ و نیز در یابد که در زمان سعادت نشان حضرت عرش g اشیاني در عمل دیوانئ راجه ٹودرمل دستور اخذ محصول چه بود ؟ و وجوهٔ سایر موافق ضابطهٔ قدیم است یا از سالِ جلوس مبارک زیاده بران قرار یافته ؟ و مواضع آباد چه قدر ؟ و ویران چند ؟ و باعثِ ویراني چیست ؟ و پس از دریافت کیفیت اینمراتب سعي در ازدیاد ابادانيِ دهاتِ ویران و مزروع ساختن اراضي قابل زراعت بقول درست و قرار مناسب و افزوني جنس کامل بکار برد * و هرجا چاه معطل باشد در مرمت آن واحداتِ دیگر چاهها بکوشد * و جمع انرا بنوعي تشخیص دهد که کافه رعایا بحق خود برسد - و مالواجب بهنگام تحصیل در آید - و بر هیچ احدے از رعایا تعدی h نرسد - و هر سال نسخجات j مشتمل بر قید تعداد مزارعان k هر موضع و اراضي مزروعه و غیر مزروعه چاهے و باراني و اجناس کامل و ناقص و سر انجام مزروع ساختنِ زمینِ لایقِ زراعت و افزوني

(d) Omitted by A.
(e) A. از جمله
(f) B. چقدر
(g) A. عرش استاني
(h) A. نورد
(i) A. منتقل
(k) A. که

جنسِ کامل و آباد شدنِ دیهاتے - که از سنوات ویران بوده - درست نموده در دستور العمل سابق آنچه زیاده مقرر شده باشد *m* تفصیل انرا با مقدار مبلغی که در سال تمام فراهم [268, *b.*] °ي آمده باشد معروض دارد * و این ضابطه و پرداخت را از ابتدای خریف شمالن *n* ئیل سنه هشت از جلوس والا مقرر دانسته بدینموجب عمل نماید - و بعاملان محال جاگیرداران هم تاکید کنند که بهمین نمط کار بند شوند *

اول آنکه — عملان و چودهریان را در خلوت راه ندهد . و مقرر کند که سر دیوان حاضر میشده باشد * و ریزهٔ رعایا و غربا که برای عرضِ حال بیایند آنها را در خلا و ملا راه داده بخود آشنا سازد - تا در اظهارِ حاجت محتاج بتوسطهٔ غیري نباشند *

دوم آنکه — بعاملان قدغن نمایند که سر سال دیه بدیه *p* مزارع و تعداد قلبه و کمیت و رقبه وا رسیده - اگر رعایا بحال باشد اهتمام کند که هریکے بقدر حال در ازدیادِ تخم ریزي کوشیده نسبت بسالِ گذشته افزوني مزروعات بعمل آرند * و از جنس اِدنا بجنس اعلی میل نموده تا توانند زمینِ لایقِ زراعت افتاده نگذارند * و اگر احدے از کارندها فراري شده باشد وجهٔ آنرا دریابند - و در مادهٔ معاودت او بمکان مالوف جهد بلیغ بکار برند * *q* و همچنین در فراهم آوردنِ کشاورزان از اطراف و جوانب سعي *r* مشکور و استمالت و دلاسايي موفور بجا آرند * و زمین بنجر بدستوریکه مزروع شود مقرر سازند *

سیوم آنکه — بامنايي پرگنات تاکید نماید که سر سال بموجودات [269, *a.*] مزروعات دیه بدیه اسامي‌وار وا رسیده جمع را از روی جزورسي بمقتضایٔ کفایت سرکار و رفاهیتِ رعایا تشخیص نمایند * و دول جمع بلا اهمال بدفترخانه والا ارسال دارند *

چهارم آنکه — بعد تشخیص جمع مقرر کنند که بروفق موعود که در هر

(*m*) A. بفصل
(*n*) A. سالین ئیل B. علان نیل
(*p*) A. مزارع و به تعداد B. — مزروع و تعداد
(*q*) B. omits و همچنین but begins سیوم here.
(*r*) B. بسعي موفور و دلاسای بجا آرند

پرگنه اقساط ما لواجب قرار مي يابد - درين باب قدغن کند که تحصيل محصول بر محال شروع نموده باز خواست موافق ميعاد بعمل آرند * و خود هفته بهفته خبر گرفته تاکيد نمايد که از قسط معيّن چيزی باقي نگذارند - واحياناً از قسط اول چيزی موقوف داشته باشد - در قسطِ دوم بقيدِ وصول در آرند - و در قسط سيوم بالتمام بی باق نمايند *

پنجم انکه — باقیءٔ سنوات را اقساطِ مناسب بقدرِ حالت و طاقتِ رعايا قرار داده بکروريان تاکيد نمايد که موافق وعده به تحصيل در آيد * و خود از سر انجامِ وصولِ آن [s] خبرياب باشد - و از غوايت و مسامحهٔ عمال در تعويق نيفتد *

ششم آنکه — هرگاه خود برای دريافت حقيقت پرگنات در هر ديهی که عبور نمايد صورت مزروعات و ربع آن و استطاعتِ مزارع و قدرِ جمع بنظر در آورده - اگر در تفريق جمع بر هر واحد [u] حق و حساب بعمل آمده باشد بهتر * و اگر چودهري يا مقدم يا پٹواري [v] ستم شريکی نموده باشد - مزارع را مستمل [269, ٪.] ساخته بحق رساند * و گنجايش از تحت متغلبان برآرد - و بالفعل در تشخيص سال حال و تفريق موجودات آن از رویءٔ راستي و جزورسي پرداخته مفصل بر نگارد - تا حقيقت کار دانيءٔ اُمنا و حسنِ پرداختِ آن [w] وزارت پناه ظاهر شود *

هفتم آنکه — ناکار و انعام موافقِ معمولِ سرکار عملِ خالصه شريفه بحال دارد * و آنچه عاملان سرکار عالي متعالي افزوده باشد وا رسد - که انجماعه از ابتدای تنخواه جاگير چه قدر باقي نگاهداشته ؟ و چه مقدار بصيغهٔ کمي وآفت مجری گرفته ؟ نظر برينمراتب گذاشته را * باز يافت نمايد - و آينده موقوف دارد - که هرگاه آنها [y] پرگنات را بحال اصلي [z] قرار خواهند داد [aa] حقيقت بعرضِ والا خواهد رسيد - در [کور] دولت خواهي بهر کدام رعايت خواهد شد *

هشتم انکه — در فوطه خانه مقرر کند که فوطه داران سکه مبارک عالمگيري

(s) B. & A. جزيات
(t) ربع يعنی ربعات
(u) B. gives. در حق
(v) B. ستم بريکی
(w) B. امارت پناه
(x) A. باز باقينمايد
(y) A. omits هرگاه
(z) A. اصلي عود خواهند داد
(aa) B. و حقيقت

بگیرند - و بر تقدیر عدم وجود این جنس روپیه شاهجهاني چلني رایج بازار گرفته صرف سکه ابواب جمع نمایند * اما روپیه کموزن که رایج بازار نباشد هرگز داخل فوطه خانه نکنند - و اگر بدانند که در باز گردانیدن جنس ناقص تحصیل در تعویق مي افتد - وجه بدلائي موافق حق و حساب از رعیت گرفته تبدیل آنرا رو برو بعمل آرد *

نهم آنکه — خدا نخواسته اگر آفت [270, *a*.] سماوي یا ارضي در محلی رو نماید - بامنا و عمال تاکید بلیغ کندکه موجودات مزروعات را قرار واقع بکمال احتیاط نگاهباني نمایند *bb* و به مزارع وا رسیده از روی جزورسي موافق هست و بود مشخص سازند * وافت سر بسته - که تفریق آن *cc* باخبار چودهریان و قانونگو و مقدم و پٹواري باشد هرگز بعمل نیارند * تا ریزه رعیت بحق رسیده از آسیب *dd* و نقصان ایمن ماند و متغلبان نتوانند تغلب کرد *

دهم آنکه — در بابِ عدم بلیه [؟] و رفعِ اخراجات زاید المال و ابواب ممنوعه که باعث تفریقهٔ حالِ رعایاست - بامنا و عمال و چودهریان و قانونگویان و متصدیان تاکید بلیغ نموده منچلکات بگیرند -که زیادتي بلیه واخذ ابواب ممنوعه مقطوعهٔ درگاهٔ خلایق پناه هرگز بعمل نیاید * و خود همیشه *ee* خبریاب باشد - و اگر احدے بران اقدام نماید - و بمنع و تهدید باز نیاید - حقیقت را بحضور بنویسد - تا از خدمت معزول شود و بجایٔ او دیگری منصوب گردد *

یازدهم انکه — برای بر آمد کاغذ هندوی بفارسي بحقیقت *ff* باجه و بیسریٔ مال و اخراجات و رسومات اسامي وار وا رسیده - هرچه بهمه جهت از خانه رعیت بر آمده باشد واصلات فوطه خانه محسوب ساخته - مابقي تصرف امین و عامل و زمینداران وغیر ذالک نام بنام بنویسد - و تا ممکن باشد [270, *b*.] کاغذ خام *gg* تمام دیهات پرگنه فراهم آورده ترجمه نماید * و اگر

(*bb*) Omitted by A.

(*cc*) B. خود زباني قانونگو الخ

(*dd*) B. از سبب نقصان

(*ee*) B. & A. جزیات

(*ff*) B. با چه داري حال و اخرجات در مرسات اسامي و ار الخ A. باجهة وبهتري مال

(*gg*) A. بنام دیهات

بسببِ عدم وجود پٹواري يا وجهي ديگر كاغذ مواضعِ معدودے بدست نيايد ـ آن جزو را از روي برآمد *hh* ديهات كليه سراسري كرده داخل طومار كند * ديوان را مي بايد كه بعد طيار شدن طومار اگر موافق دستور بقلم امده باشد نگاهدارد ـ و وجه تصرف عملان موافق ضابطه ؟و تصرف چودهري و قانونگو و مقدم و پٹواري *zz* انچه زياده از رسوم مقرر گرفته باشد بمعرضِ باز خواست در آرد *

دوازدهم انكه — از جماعه اُمنا و كرو يان جاگيرداران هركس كه براستي دولتخواهي بتقديم خدمت قيام نمايد و موافق دستو رے كه بقلم آمده در هر باب اقدام ورزيده مراسم نكو خدمتي بجا آرد بنويسد ـ كه در خورِ كفايت انديشي و ديانت‌داري به نتيجه بهره‌مند شود * و اگر خلاف آن عمل نمايد حقيقت او را بحضور برنگارند كه از خدمت معزول و از نوكري بر طرف شده پائي باز خواست و مواخذه آمده سزاىٔ كردار ناهنجار در كنار خويش بيند *

سيزدهم انكه — گرداورىٔ كاغذ سر رشته بتاكيدِ تمام بوقت و هنگام نمايد و درمحلے كه خود اقامت داشته باشد روز نامچهٔ تحصيلِ مال و ساير و نرخنامه روز بروز [و] از پرگنات ديگر روز نامچهٔ تحصيل مال و موجودات پا نزده روزه و از *mm* تتمه [271, *a*.] تحويلِ فوطه‌دار و جمع واصلباقي ماه بماه و طومار جمع مجمل و جمع بندي و جمع خرچ تحويل فوطه‌دار فصل بفصل از عاملان بعيد تحصيل در آورده و آن را ملاحظه نموده ـ *nn* انچه زواىد از حساب مصروف شده باشد بمعرضِ باز خواست در آورده ـ بدفتر خانهٔ والا ارسال دارد ـ و كاغذِ ربيع تاخريف موقوف نگذارد *

[271, *b*.] چهارم دهم انكه — امين و عامل و فوطه‌دار كه از خدمت معزول شود ـ كاغذ از انها بتاكيد تمام گرفته *pp* سر حساب آمد ـ و ابواب باز

ديهات بسنجد اگر موافق دستور بقلم امده باشد نگاهدارد و بر جمله A. (*hh*) تصرف عملان

و انچه B. (*jj*)

A. كروريان و از ان هركس B. كروريان داران هر كس (*kk*)

A. نز شبيه (*mm*)

انچه برايد يا تصرف شده باشد B. (*nn*)

بسر حساب آرد و ابواب باز باقي از روى الخ B. (*pp*)

یافتنی از روی بدرنویسی موافق (qq) قاعده دیوانی بعرض باز خواست در آورده - (rr) کاغذ را با سررشتهٔ وصول ابواب عاملِ معزول بکچهری والا بفرستد - که از محاسبه دفتر فراغ حاصل نماید *

پانزدهم انکه — (ss) نسخهٔ دیوانی مطابق قاعدهٔ معهوده فصل بفصل ترتیب ساخته بمهر و تصدیقِ خود بدفتر خانهٔ و الا ارسال میدارشته باشد *

* تمام شد *

(qq) B. کاغذ

(rr) B. کاغذات را تابه سررشته ابواب بدرنویسی عامل معزول

(ss) B. انکه مطابق قاعده معهوده کاغذات فصل بفصل مرتب ساخته الخ

32. *Shāista Khān in Bengal* (1664–'66).—*By* JADUNATH SARKAR, M.A., *Professor, Patna College, and Member, Asiatic Society of Bengal.*

Materials.

When Mir Jumla invaded Kuch Bihar and Assam, he had in his train an officer named Shihabuddin Tālish, who has left a detailed history of the expedition, named by the author the *Fathiyyah-i-ibriyyah*. A long abstract of it was given by Mr. Blochmann in the Society's Journal for 1872, Part I, No. 1, pp. 64–96. Our Society has a fine old MS. of this work (D. 72), and the Khuda Bakhsh Library three others. All these end with the death of Mir Jumla, 31st March, 1663.

But the Bodleian Library possesses a MS. of the work (No. Bod. 589, Sachau and Ethé's *Catalogue*, Part I, No. 240), supposed to be the author's autograph, which contains a continuation (folios 106, *a*–176, *b*.), relating the events immediately following and bringing the history down to Buzurg Ummed Khān's victorious entry into Chātgāon (Chittagong), 27th January, 1666. This portion is absolutely unique [1] and of the greatest importance for the history of Bengal, as will be seen from the abstract I give below. I have procured photographic reproductions of these 71 leaves of the MS.

Authorship.

The internal evidence is overwhelming in favour of the *Continuation* being regarded as Shihabuddin Tālish's work. The style is marked by the same brilliancy of rhetoric; many favourite phrases and turns of expression are common to both; and one peculiar sentence,

* ساكن داري و نافخ ناري درآن سرزمين نهستند

which I have found in no other Persian history, occurs in both (*Conquest of Assam*, p. 58 of our MS. D. 72, and *Continuation*, folio 124, *a*.). We have here (*f.* 156, *b*.) one instance of the author's vicious habit of running the variations of a single simile through a whole page of which there are three examples in the *Conquest*. The writer is the same hero-worshipper, only Shāista Khān here takes the place of Mir Jumla. Neither of them is named, but both are indicated by laudatory titles, Mir Jumla being *Nawwāb Mustaghani-ālqāb*, and Shāista Khān *Nawwāb Mu'ala-ālqāb*.

Defects.

The author evidently died shortly after writing the *Continuation*, for it ends abruptly, without carrying on the campaign in the Chātgāon District to its conclusion. He had no time to give it the finishing touches: the material is loosely arranged; there is no regular division into chapters as in the *Conquest*, only three headings (*surkhi*) being given (*ff.* 150, *b*, 153, *a*, and 161, *b*.). Moreover, the author has

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1 I suspect that there is a scrap of it at the end of an India Office MS. of the work, which Ethé in his Catalogue describes as narrating the conquest of Jātkām (should be Chātgāon).

left blanks for dates in two places (*ff.* 149, *b.* and 175, *b.*), which he evidently meant to fill up after consulting other sources. Wrong dates are given in 106, *a*, and 167, *a.* and some obscurity has been introduced into the narrative by his passing over the first day of the siege of Chātgāon (25th January, 1666) in absolute silence.

No autograph.

I do not think that there is any good ground for holding with Sachau and Ethé that "this copy may be Shihab-al-din's autograph." Two lines of the previous page are repeated by mistake in *f.* 117, *a.* There are two lacunæ: 136, *b.* 6 and 169, *a.* 7. In some places blank spaces have been left, evidently for putting down headings in red (*surkhi*). All these facts go to show that the work is a mere copy and not the original. Besides, there are several errors of spelling of which an accomplished author and professional writer (*wāqi'a-nawis*) like Shihabuddin could hardly have been guilty.

Analysis of the *Continuation.*

Official changes following Mir Jumla's death (106, *a.*-107, *b.*) Ihtishām Khān, left by Mir Jumla in charge of Dacca, now began to exercise supreme authority. Aurangzib ordered Dāud Khān, Subahdar of Bihar, to administer Bengal, pending the appointment of a *pucca* Subahdar; Dilir Khān to officiate until Dāud Khān arrived. Dāud Khān arrived near Dacca, 27th September, 1663, and stayed at Khizrpur.

Khizrpur commands the route of the pirates of Chātgāon (108, *a.*)—Decay of the Bengal flotilla, *nawāra* (108, *b.*)—Prodigality and corruption of the officiating governors (109, *a.*)—The pirates plundered Bhushna during the absence of the cruising admiral, *sardār-i-sairāb* (110, *a.*)—Dāud Khān on his own responsibility remitted the tithe (*zakat*) on grain, in order to relieve the scarcity at Dacca (110, *b.*)—True condition and causes of the decay of the flotilla (112, *a.*)—Shāista Khān enters Rajmahal, 8th March, 1664 (114, *a.*)—New appointments made by him (115, *a.*)—Shāista Khān pushes on shipbuilding (115, *b.*), demands help from the Captain of the Dutch (116, *a.*), plans to win over the Feringees of Chātgāon (116, *b*).

His internal administration: gives relief to jāgirdārs and āimadārs (117, *a.*-121, *a.*) *translated below.*—Raja of Kuch Bihar makes submission.

Piratical incursion into Bagādia (122, *a.*)—Account of the pirates of Chātgāon (122, *b.*)—their oppression and sale of captives, (123, *a.*)—they desolate Bagla.—Cowardice of the Bengal navy (124, *a.*)—Anecdote of 'Āshur Beg, cruising admiral (124, *b.*)—Former governors of Bengal only bent upon extorting money, but negligent of the duty of protecting the people (125, *a.*)—Author protests his veracity (126, *a.*) and then describes the ten merits of Shāista Khān (127, *a.*-132, *b.*) *translated below.*—'Aqidat Khān, faujdār of Dacca, makes defensive arrangements (133, *a*)—Shāista Khān's piety (133, *b.*)—Miracle at Rajmahal (134, *a.*).

Shāista Khān leaves Rajmahal, 16th October, and enters Dacca, 13th December, 1664. (134, *b.*-137, *a*).—Great exertions in building and equipping warboats (137, *b.*).—New arrangement for patrolling the rivers (138, *b*)—Thana and port established at Sangrāmgarh (139, *b.*)—Causeway built from Dhāpa to Sangrāmgarh (140, *a.*)—Raja Indraman (=Indradumna) imprisoned for the rebellion of his clansmen (141, *a.*).—Portent at Makhsusābād (=Murshidabad) (142, *a.*).

Sondip, island, described (142, *b.*)—its forts—colonised by Dilāwwar, a runaway ship-captain of Jahangir's time (143, *b.*)—Dilāwwar defeats the Arracanese and reigns supreme (144, *a.*)—Abul Hassan ordered by Shāista Khān to spy out the nakedness of Sondip (145, *a.*)—His ruse (145, *b.*)—The Nawwāb prepares for a regular siege of Chātgāon (146, *a.*).

First invasion of Sondip by Abul Hassan, 9th November, 1665 (147, *a.* and *b.*)—Second invasion of Sondip, 18th November, 1665 (148, *b.*)—Capture of Dilāwwar and his son Sharif (149)—Mughal rule established in the island (150, *a.*).

The winning over of the Feringees of Chātgāon (150, *b.*):—The Nawwāb tempts them by various men (151)—They come over to Farhād Khān at Noākhāli, with their families and boats (152, *a.*)—Conversation between Shāista Khān and the Feringee leader, Captain Moor (152).

Description of Arracan (153, *a.*)—Three Arracanese invasions of Bengal (154, *b.*)—Reasons for the Nawwāb not commanding the Chātgāon expedition in person (157, *a.*)—Buzurg Ummed Khān, the commander of the expedition, starts from Dacca, 24th December, 1665 (158, *a.*)—Composition of his force (158, *b.*)—Jungle-clearing and road-making (159, *b.*)—Expeditionary force constantly supplied with provisions (160, *a.*).

Army advances, step by step, in co-operation with the flotilla (161, *a.*)—Ibu Husain, the admiral, enters the creek of Khamaria,—van of the land force joins him, 21st January, 1666 (161, *a.* and *b.*).

Capture of Chātgāon (161, *b.*):—The impassable barrier between Bengal and Chātgāon (162, *b.*)—Chātgāon fort described (163, *a.*-164, *a.*)—Ibrahim Khān's expedition to Chātgāon failed (164, *b.*)—Anxiety about the success of Shāista Khān's expedition (165, *b.*-167 *a.*).

First naval battle, 22nd January.—the Arracanese put to flight, 10 *ghurābs* captured (167, *b.*-168, *a*).

The two fleets again face each other—night of 23rd January spent in distant cannonade.—Second naval battle, 24th January, (169, *a.* & *b.*)—The Arracanese retreat into the Karnphuli river.—The Mughals close its mouth (170, *a.*), burn three stockades on the bank, and then attack and capture the Arracanese navy (170, *b.*-171, *a.*).

The Arracanese garrison evacuate Chātgāon fort, night of 25th January (171, *b.*)—Mughal generals enter it (172, *a.*) on the 26th. Fort opposite Chātgāon also evacuated.

News of the conquest reaches Dacca, 29th January. Rewards granted by the Nawwāb and the Emperor (172, *b.*-173, *b.*).

Exultation in Bengal.—How the conquest benefited the Exchequer (174, *b.*).

Buzurg Ummed Khān enters Chātgāon fort, 27th January, restores order, and conciliates the people (175, *b.*).

Previous attacks of the Bengal forces on the Arracanese (176, *a*, and *b.*).

—o—

Heads of Information.

The *Continuation*, therefore, supplies us with useful and original information on the following four subjects :—

(1) Shāista Khān's administration of Bengal up to January 1666. (2) The system of piracy followed by the Feringees of Chātgāon, and a record of the various Magh incursions into Bengal and Bengal attacks on the Maghs. (3) A description of Sondip and the history of its conquest. (4) A description of Chātgāon and the history of its conquest.

I shall deal with the first only in this article.

Shāista Khān's Civil Administration.

(*Translation.*)

[117, *a.*] The mansabdars had their jagirs situated in different parganahs, and the multiplicity of co-partners led to the ryots being oppressed and the parganahs desolated. Large sums were wasted [in the cost of collection] as many *siqdars* and *'amlas* had to be sent out by [every] jagirdar. Therefore, the Nawwāb ordered the *diwān-i-tan* to give every jagirdar *tankha* in one place only; and, if in any parganah any revenue remained over and above the tankha of a jagirdar [117, *b.*], it was to be made over to the jagirdar for collection and payment into the public treasury. Thus the department of Crownlands would make a saving by not having to appoint collectors [of its own in the parganahs of jagirdars]; and, secondly, it was not good for one place to have two rulers [*viz.*, the jagirdar's and Government collectors]. The *diwān-i-tan* set himself to carry out this work.

Next, Shāista Khān learnt the truth about the appointments and promotions made after Mir Jumla's death by the acting Subahdars. Most of these men were now dismissed; a few, who were really necessary for the administration, were retained in service. I have noted this difference between Shāista Khān and other servants of the Crown, in the matter of saving Government money, that they desired solely to gain credit with the Emperor, while his aim is pure devotion and loyal service. He considers the parading of this fact as akin to hypocrisy and remote from true devotion and fidelity.

At this time the *āimadārs* and stipend-holders of the province of Bengal began to flock to the Nawwāb to make complaints [118, *a.*]. The facts of their case were :—After the reign of Shah Jahan, the late Khān-i-khānān [Mir Jumla] confirmed in his own

jagirs many of these men who were celebrated for devotion to virtue and love of the Prophet's followers, and some who had got *farmāns* of the Emperor. All other men who had been enjoying *madd-o-m'aāsh* and pensions in the Crownlands and fiefs of jagirdars, were violently attacked by Qāzi Rizwi, the Sadr; their *sanads* were rejected and their stipends and subsistence cancelled. It was ordered that the *āimadārs* should take to the business of cultivators, till all the lands they held in *madd-o-m'aāsh*, and pay revenue for them to the department of Crownlands or to the jagirdars. And, as in carrying out this hard order these poor creatures could not get any respite, many who had the capability sold their property, pledged their children [as serfs], and thus paid the revenue for the current year [118, *b.*], preserving their lives as their only stock for the next year. Some, who had no property, brought on themselves torture and punishment, gave up their lives, and thus escaped from all anxiety about the next year.

[*Verse.*]

Like fire they ate sticks [*i.e.*, received beating] and
gave up gold [or sparks],
And then, through loss of strength, they fell down
dead in misery.

And now even by the resumption of the cultivated lands sufficient gain in the form of produce cannot be collected, because the *āimadārs* abstain from tilling the lands that have been escheated to the State; and even the chastisement and pressure of the *'amlas* cannot make them engage in cultivation. And so the land remains waste and the *āimadars* poor and aggrieved. Owing to the great distance and the fear of calamities, these poor perplexed sufferers could not go to Delhi to report their condition fully to the Emperor and get the wicked and oppressive officials punished [119, *a.*]. Hence their sighs and lamentations reached the sky.

One Friday, the Nawwāb, as was his custom, went [to the mosque] to offer his Friday prayer. After it was over he learnt that an old *aimadar* had suspended his head upside down, one yard above the ground, from a tree near the mosque, and that he was on the brink of death and was saying:

[*Verse.*]

Shall my life return [to my body] or shall it go out,—
what is thy command?

The Nawwāb ordered the author to go and ask the reason. I went to the old man and inquired. He replied, "My son, who held thirty *bighas* of land in *madd-o-m'aāsh*, has died. The *amlas* now demand from me one year's revenue of the land. As I have no wealth, I shall give up my life and thus free myself [from the oppression]." I reported the matter to the Nawwāb, who gave

him a large sum, and then confirmed his son's rent-free land on him.

[*Verse.*]

God favours that man,
Whose life gives repose to the people. [119, *b.*]

The wise know that the resumption of the lands of *āimadārs* and the cutting off of the subsistence of stipend-holders bring on great misfortunes and terrible consequences [on the wrong-doer]. I have seen some among the rulers of this country who engaged in this wicked work and could not live through the year.

[*Verse.*]

The dark sigh of sufferers, in the heart of dark nights,
Snatches away by [God's] command the mole of prosperity from the cheek of the oppressor.

It is a lasting act of virtue and an undying deed of charity to bestow *imlāk* on the needy and *idrār* on the poor. The hindering of such liberality and the stoppage of such charity does not bring any gain in this world and involves one in the Creator's wrath in the next.....

[120, *a.*] One day there was a talk on this subject in the Nawwāb's court. As "the words of kings are kings among words," he remarked, "If a man has not grace enough to increase the gifts made to these [poor] people, he should at least not deprive them of what others gave them [120, *b.*], because.....these people, too, should be counted among the needy. And one should not through his own meanness of spirit and vileness of heart resume the charitable gifts of others."

In short, the Nawwāb's natural kindness having been excited, he ordered that Mir Sayyid Sādiq, the Sadr, should fully recognise the *madd-o-m'aāsh* and *wazifa* which these men had been enjoying in the Crownlands according to the reliable *sanads* of former rulers. As for what was held [rent-free] in the fiefs of jagirdars, if it amounted to one-fortieth of the total revenue of the jagirdar, he should consider it as the *zakat* on his property and spare it. But if the rent-free land exceeded one-fortieth [of the total jagir], the jagirdar was at liberty to respect or resume [the excess]. Whosoever held whatever rent-free land in the parganahs of the jagir of the Nawwāb, on the strength of the *sanad* of whomsoever, was to be confirmed in it without any diminution, and was on no account to be troubled [by demand of revenue]. As for those who had no means of subsistence and now, for the first time, begged daily allowances and lands in the jagir of the Nawwāb, the *diwāni* officers were ordered to further their desires without any delay.

The Sadr carried out the above order in the case of the Crownlands and the jagirs of [other] jagirdars [121, *a.*]. In the jagir of the Nawwāb his *diwān-i-bayutāt*, Khawājah Murlidhar,—who had been brought up and trained in the Nawwāb's household,

was marked by honesty and politeness, possessed his master's confidence and trust, and, in spite of his still being in the flower of youth, had the wisdom and patience of old men,—displayed in this work of benevolence such zeal and exertion as, I pray, God may favour all Musalmans with. Every day two to three hundred *āimadārs* presented their *sanads* to him and then departed. Next day, in the presence of the Nawwāb, he passed them through the Record office and sealed them, and then gave them back to the *āimadārs*. In short, he exhibited such great labour and praiseworthy diligence in this business, that every one of this class of men got what he desired. And the aforesaid Khawājah gained good name and respect for himself, temporal and spiritual welfare for his master, and prayers for the perpetuation of the empire for the Solomon-like Emperor. (*Verse*) [121, *b*.]

That man's influence with the king is a blessed thing,
Who forwards the suits of the distressed.

Shāista Khān's Good Deeds.

(*Translation.*)

[127, *a*.] I. His exertions for conquering the province and fort of Chātgāon; the suppression of the pirates, and the consequent relief of the people of Bengal.

II. Every day he held open *darbār* for administering justice, and quickly redressed wrongs. He regarded this as his most important duty.

III. He ordered that in the parganahs of his own jagir everything collected by the revenue officers above the fixed revenue should be refunded to the ryots. [127, *b*.]

IV. The former governors of Bengal used to make monopolies (*ijāra*) of all articles of food and clothing and [many] other things, and then sell them at fanciful rates which the helpless people had to pay. Shāista Khān restored absolute freedom of buying and selling.

V. Whenever ships brought elephants and other [animals] to the ports of the province, the men of the Subahdar used to attach (*qurq*) them and take whatever they selected at prices of their own liking. Shāista Khān forbade it.

VI. His abolition of the collection of *zakat* (*i.e.*, $\frac{1}{40}$ of the income) from merchants and travellers, and of custom (*hāsil*) from artificers, tradesmen and new-comers,[1] Hindus and Musalmans alike. The history of it is as follows:—

From the first occupation of India and its ports by the Muhammadans to the end [128, *a*.] of Shah Jahan's reign, it was a rule and practice to exact *hāsil* from every trader,—from the rose-vendor down to the clay-vendor, from the weaver of fine linen to that of coarse cloth,—to collect house-tax from new-comers and hucksters, to take *zakat* from travellers, merchants and stable-

[1] *Khush-nashin*, which may also mean 'well-to-do men.'

keepers (*mukāri*). As S'adi has said, "At first oppression's basis was small; but every successive generation increased it," [so it happened], till at last in all provinces, especially in Bengal, it reached such a stage that tradesmen and merchants gave up their business, householders took to exile, saying—

[*Verse.*]

"We shall flee from the oppression of the Age,
To such a place that Time cannot track us there."

The rulers, out of greed for *hāsil*, gave them no relief. On the roads and ferries matters came to such a pass that no rider was allowed to go on unless he paid a *dināṙ*, and no pedestrian unless he paid a *diram*. On the river-highways if the wind brought it to the ears of the toll-collectors (*rāh-dārs*) that the stream was carrying away a broken boat without paying *hāsil*, they would chain the river [128, *b*.]. If the toll-officers heard that the wave had taken away a broken plank [without] paying *zakat*, they would beat it on the back of its head in the form of the wind. They considered it an act of unparalleled leniency if no higher *zakat* was taken from rotten clothes actually worn [on the body] than from mended rags, and a deed of extreme graciousness if cooked food was charged with a lower duty than uncooked grains. None of the Delhi sovereigns, in spite of their efforts to strengthen the Faith and follow the rules of the Prophet, put down these wicked and [canonically] illegal practices, but connived at them. Only, we read in histories, Firuz Shāh forbade these unjust exactions. But after him they were restored, nay increased. But when, by the grace of God [129, *a*.] Aurangzib ascended the throne, he sent orders to the governors of the provinces and the clerks of the administration not to do such things in future. He thus gave relief to the inhabitants of villages and travellers by [129, *b*.] land and sea from these harassments and illegal demands. The learned know that no other king of the past showed such graciousness, made such strong exertions, and remitted to the people such a large sum—which equalled the total revenue of Turān.

[*Verse.*]

O God! Keep long over the heads of the people,
This King, the friend of holy men,
Whose shadow gives repose to the people.
Through the guidance of [Thy] service, keep his heart alive.

I strongly hope that, just as the peasants and merchants have been released from oppression and innovations [in taxation], so someone would fully and freely report to the Emperor the distress among the soldiery and the fact of their being harassed and crushed by the oppression of the thievish clerks, and thereby release the soldiers from the tyranny of these godless men [130, *a*.]. The army is treated by the Hindu clerks, and drowsy

writers as more degraded than a fire-worshipping slave and more unclean than the dog of a Jew. Whenever that forked-tongued cobra, their pen, brings its head out of the hole of the ink-pot, it does not write on the account-book (*tumār*) of their dark hearts any letter except to pounce upon and snatch away the subsistence of the soldiers. Indeed, when their tongue begins to move in the hole of their mouth, it does not spit out anything except curtailing the stipends of the soldiery. At times they would senselessly split a hair, and do not abstain from numerous unjust fines.

Again, if after life-long exertion and the showering of bribes, they are induced to sign the *fard-i-chehra* of any soldier, then, at the time of branding (*dāgh*), they designate a charger worthy of Rustam as a mere pack-horse, and on the day of verification (*tashiha*) they describe [in the records] a horse that stands erect as fit for the yoke جوگیر, a horse that bends its leg as lame, a horse that shies as doubtful شکی, a horse that lacks a particle of hair as Taghlibi. They call a Dāudi coat of mail the film of a wasp پردہ زنبور and a steel helmet itself a small linen cap. They regard a Rustam as a Zāl, and a Zāl as a mere child. May God the Giver [130, *b*.] reward with the long life of Noah, the patience of Job, and the treasures of Corah that valiant man, brave like Asfandiār, who after traversing these hill-tops (=hindrances) gets his *tasdiq yād-dāsht qabz* and *barāt* passed through the Haft-khān of the accounts department, so that his business may be done. In the shambles of the *kachāri* of Crownlands stipendholders have to flay themselves [before getting their dues], and at the sacrificial altar of the office of the *diwān-i-tan tankha-dārs* find it necessary to root out their own lives. O ye faithful! Did man ever hear of such tyranny as that each letter of the identification-marks of the record office should be written by a [different] clerk? O ye Muslims! Did man ever see such oppression as that one word has to be written by ten men? In [making out] the assignment-paper (*barāt*) they decrease the *tankha* due and magnify the deduction to be made. If, through a mistake, the balance is entered in the receipts (*qabuz*), they treat it as a true record and appropriate the amount to themselves. And they think that they have conferred a great obligation if they consent to [issue such a paper as] this :—"In the parganah of Wirānpur (city of Desolation) in the *sarkār* of 'Adamābād (Depopulation), tracts are assigned on the revenue in jagir [to the duped soldier?] and [he should] demand from the jagirdar *Khāna-kharāb* (Ruined) the arrears of many years at this place." A day's difference in the verification (*tashiha*) is seized upon as a ground for making a year's deduction [from the trooper's pay.] If a man has entered service on the 1st Farwardi, they assign *tankha* to him from the end of the coming Asfandār. For the single grain of wheat (=fruit of the tree of knowledge, in Muslim mythology] which Father Adam, in his jagir of the *sarkār* of Jannatābād (Paradise), ate without [131, *a*.] authorisation, they demand from his progeny refund amounting to

an ass's load. If a man's pay is due for 3 years, they designate it as one for many years and then write [only] one-half of it (?). The faces of the clerks of the *taujih* (description-roll) are disagreeable. The answer of the author of this journal is, "The state of not being in need is better, without the need of taking oaths [to it]." No harm has been done to me by these men (the clerks), and no confusion has been introduced into my affairs by them; but [I write] from seeing and hearing what they have done to the helpless and the weak in the court [of the Nawwāb] and in the provinces far and near.

[*Verse.*]

My heart is oppressed, and the pain is so great,
That so much blood gushes out of it.

In short, the Emperor's orders for abolishing *zakat* and *hāsil*, sent to Bengal, were for abolishing them in the parganahs of the Crownland. The Nawwāb had a free choice in his jagir with regard to all exactions except the *rāhdāri* and the prohibited cesses (*ābwābs*). But this just, God-fearing, benevolent governor, out of his sense of justice and devotion to God, abolished the *hāsil* amounting to 15 lacs of rupees which used to be collected [131, *b*.] in his own jagir, and he thus chose to please God, relieve the people, and follow his religious master (Aurangzib).

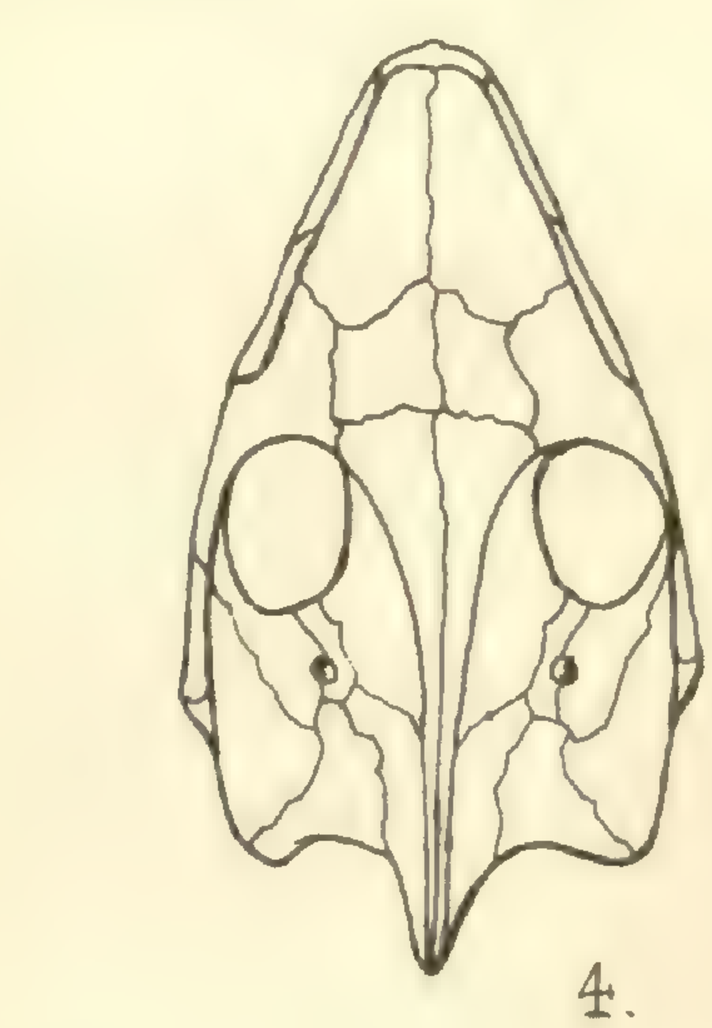
VII. In many parganahs the despicable practice had long existed that when any man, ryot or newcomer (*khush-nashin*), died without leaving any son, all his property including even his wife and daughter was taken possession of by the department of the Crownlands or the jagirdar or zemindar who had such power; and this custom was called *ānkura* [=hooking]. The Nawwāb put down this wicked thing.

VIII. In the *kotwāli chabutras* of this country it was the custom that whenever a man proved a loan or claim against another, or a man's stolen property [was recovered], the clerks of the *chabutra*, in paying to the claimant his due, used to seize for the state one-fourth of it under the name of "fee for exertion." The Nawwāb abolished it.

IX. When the plaintiff and defendant presented themselves at the magistracy (*muhakuma*) both of them were kept in prison until the decision of their case, lest it should be wilfully delayed (?). And their liberators (*itlāq-goiān*) took daily fees from the prisoners and paid them into the State. This custom, too, was now abolished.

X. The courtiers [132, *a*.] used daily to present to the Nawwāb many needy persons, and he made them happy with gifts of money. When he set out on a ride or dismounted at a stage or took a walk, and also on the day of *'Id* and other holy days, in addition to [supporting] the established almshouses, he used to invite the populace and feed vast numbers to satiety at the tables he spread. His profuse charity so thoroughly removed poverty

and need from Bengal that few hired labourers or workmen could be had [for money] to do any work.....Every year he used to send to all the provinces vast sums for the benefit of the faqirs, orphans, and motherless children, and thus laid in *viaticum* for his last journey.



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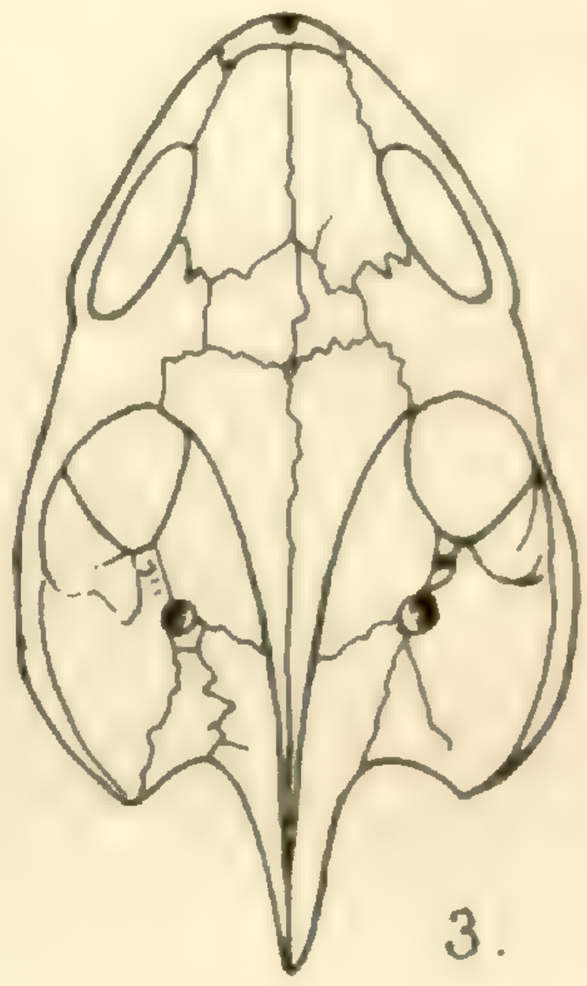

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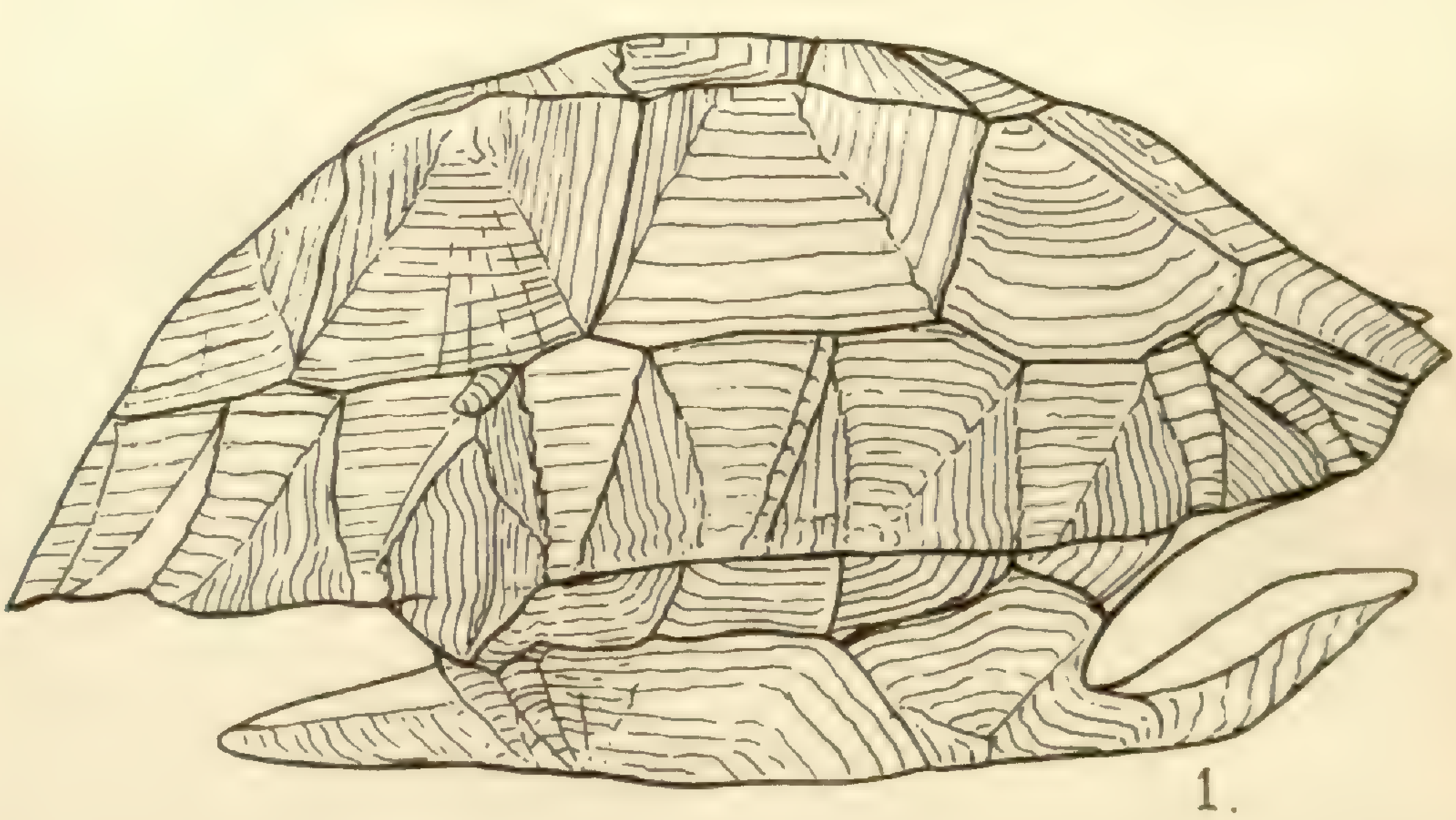

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INDIAN TORTOISES.

PRINCIPAL PUBLICATIONS OF THE SOCIETY.

Asiatic Researches, Vols. I—**XX** and Index, 1788—1839.
Proceedings, 1865—1904 (now amalgamated with Journal).
Memoirs, Vol. 1, *etc.*, 1905, *etc.*
Journal, Vols. 1—73, 1832—1904.
Journal and Proceedings [*N. S.*], Vol. 1, *etc.*, 1905, *etc.*
Centenary Review, 1784—1883.
Bibliotheca Indica, 1848, *etc.*

A complete list of publications sold by the Society can be obtained by application to the Honorary Secretary, 57, Park Street, Calcutta.

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(*f*) To receive *gratis*, copies of the *Journal and Proceedings* and *Memoirs* of the Society.

(*g*) To fill any office in the Society on being duly elected thereto.

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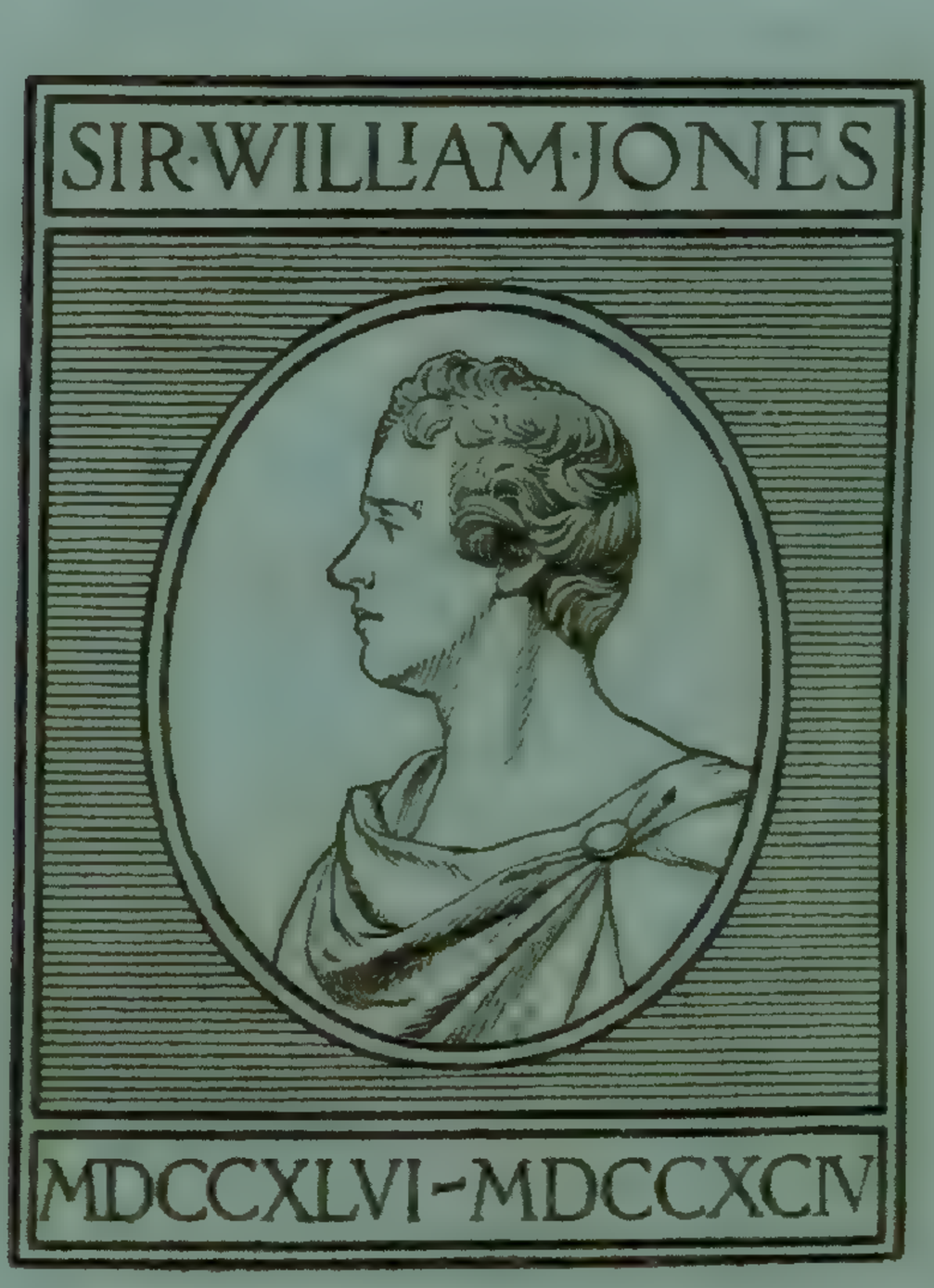

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JULY, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 4th July, 1906, at 9-15 P.M.

A. EARLE, ESQ., I.C.S., Vice-President, in the chair.

The following members were present:—

Dr. N. Annandale, Babu Sasi Bhushan Bose, Mr. I. H. Burkill, Mr. J. A. Chapman, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Mr. H. G. Graves, Mr. T. H. D. La Touche, Dr. H. H. Mann, Dr. M. M. Masoom, Major F. P. Maynard, I.M.S., Mr. R. D. Mehta, Lt.-Col. D. C. Phillott, Mr. G. E. Pilgrim, Major L. Rogers, I.M.S., Mr. R. R. Simpson, Mr. G. H. Tipper, Mahamahopadhyaya Satis Chandra Vidyabhushana, Mr. E. Vredenburg, Mr. E. H. Walsh, Mr. E. R. Watson, The Rev. A. W. Young.

Visitors:—Kumar Kshitindra Deb Rai Mahasai, Mr. J. M. Maclaren, The Rev. E. C. Woodley.

The minutes of the last meeting were read and confirmed.

Twenty-seven presentations were announced.

The General Secretary announced that Kumar Birendra Chandra Singh had expressed a wish to withdraw from the Society.

The Chairman announced that Major F. P. Maynard, I.M.S., had been appointed Secretary of the Medical Section of the Society.

The Rev. E. C. Woodley, Principal, L.M.S. College, Bhowanipur, proposed by the Rev. A. W. Young, seconded by Mr. D. Hooper; Lt.-Col. G. F. A. Harris, M.D., F.R.C.P., I.M.S., Professor of Materia Medica, Medical College, Calcutta, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S.; Lt.-Col. F. S. Peck, I.M.S., Professor of Midwifery, Medical College, Calcutta, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S; Major D. M. Moir, M.D., I.M.S., Professor of Anatomy, Medical College, Calcutta, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S.; Major J. Lloyd T. Jones, M.B., I.M.S., Assay Master, H.M's Mint, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S.; Major J. Mulvany, I.M.S., Superintendent, Presidency Jail, Calcutta, proposed by Major L. Rogers, I.M.S, seconded by Major F. P. Maynard, I.M.S.; Captain J. G. P. Murray, M.B., I.M.S., Second Resident Surgeon, Presidency General Hospital, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S.; Major E. Harold Brown, M.D., M.R.C.P., I.M.S., Civil Surgeon of the 24-Parganas, proposed by Major F. P. Maynard,

I.M.S., seconded by Major L. Rogers, I.M.S.; Captain F. P. Connor, F.R.C.S., I.M.S., in Medical Charge, 13th Rajputs, Alipur, proposed by Major F. P. Maynard, I.M.S., seconded by Major L. Rogers, I.M.S.; Dr. Arnold Caddy, F.R.C.S., Eng., proposed by Mr. W. K. Dods, seconded by Major F P. Maynard, I.M.S.: were ballotted for and elected as Ordinary Members.

Mr. I. H. Burkill exhibited two host-plants of *Thesium himalayense*, Royle. The roots of *Thesium himalayense* were traced to suckers entering roots of *Andropogon contortus*, Linn., and *Micromeria biflora*, Benth., at Alsundi, in the State of Suket, North-Western Himalaya.

Mahamahopadhyaya Satis Chandra Vidyabhushana exhibited a Tibetan almanac for 1906-1907, prepared by a Mongolian Lama living near Lhasa and containing figures of stars, etc., and prognostications of coming events.

The following papers were read:—

1. *On some Freshwater Entomostraca in the Collection of the Indian Museum, Calcutta.*—*By* R. Gurney. *Communicated by* Dr. N. Annandale.

2. *An old form of Elective Government in the Chumbi Valley.*—*By* E. H. Walsh, I.C.S.

3. *Preliminary note on the Chemical Examination of the Milk and Butter-fat of the Indian Buffalo.*—*By* E. R. Watson, M.A., B.Sc.

4 *A new Gecko from the Eastern Himalayas.*—*By* N. Annandale, D.Sc., C.M.Z.S.

5. *Freshwater Fauna of India. No. VIII.—Some Himalayan Tadpoles.*—*By* N. Annandale, D.Sc., C.M.Z.S.

6. *Some Street Cries of Persia.*—*By* Lieut.-Col. D. C. Phillott, *Secretary, Board of Examiners, Calcutta.*

7. *Proposed correction with regard to the reading of an inscription on some of the Suri dynasty coins.*—*By* Col. C. E. Shepherd. *Communicated by the Philological Secretary.*

This paper will be published in a subsequent issue of the *Journal and Proceedings.*

8. *A Parasite upon a Parasite. A Viscum apparently V. articulatum, Burm., on Loranthus vestitus, Wall., on Quercus incana. Roxb.*—*By* I. H. Burkill.

9. *Gentianacearum Species Asiaticas Novas descripsit* I. H. Burkill.

10. *Swertiam novam japonicam ex affinitate Swertiæ tetrapteræ, Maxim, descripserunt* S. le M. Moore et I. H. Burkill.

Library.

The following new books have been added to the Library during June, 1906:—

Abhidhamma Piṭaka. The Vibhanga, being the second book of the Abhidhamma Piṭaka. Edited by Mrs. Rhys Davids. *London*, 1904. 8°.

One of the Publications of the Pali Text Society.

Assam District Gazetteers. Vols. I, Cachar; II, Sylhet; III, Goalpara; V, Darrang; VI, Nowgong; VII, Sibsagar. *Allahabad*, 1905-06. 8°.

Presd. by the Government of Eastern Bengal and Assam.

Aston, W. G. Shinto—the way of the gods. *London*, *New York*, and *Bombay*, 1905. 8°.

Barthélemy, *Marquis* de. Au Pays Moï. Ouvrage accompagné de...gravures hors texte et de...cartes. Avec le portrait de l'auteur. *Paris*, 1904. 8°.

Bibliotheca Geographorum Arabicorum. Pars Tertia. Descriptio Imperii Moslemici autore Shams ad-din Abū Abdallah Mohammed ibn Ahmed ibn abī Bekr al-Bannā al-Basshāri Al Moqaddasi. Edidit M. J. de Goeje. Editio Secunda. *Lugduni Batavorum*, 1906. 8°.

Presd. by Mons. M. J. de Goeje.

Caland, W. and **Henry**, V. L'Agnistoma. Description complète de la forme normale du sacrifice de soma dans le culte védique. Tome I, *etc.* *Paris*, 1906, *etc.* 8°.

Cambridge Antiquarian Society. Octavo Publications, No. 42. The Place-names of Bedfordshire. By Rev. W. W. Skeat. *Cambridge*, 1906. 8°.

Presd. by the Society.

Crooke, William. Things Indian: being discursive notes on various subjects connected with India. *London*, 1906. 8°.

Cuinet, Vital. La Turquie D'Asie. Géographie administrative, statistique descriptive et raisonnée de chaque province de l'Asie-Mineure. 4 vols. and an alphabetical table. *Paris*, 1892. 8°.

Hirt, Herman. Die Indogermanen. Ihre Verbreitung, ihre Urheimat und ihre Kultur...mit...abbildungen, *etc.* Band I, *etc.* *Strassburg*, 1905, *etc.* 8°.

Hodson, T. C. Thado Grammar. *Shillong*, 1906. 8°.

Presd. by the Government of Eastern Bengal and Assam.

Jagadis Chunder Bose. Plant Response as a means of Physiological investigation...With illustrations.
London, 1906. 8°.

Lacôte, Félix. Une version nouvelle de la Bṛhatkathā de Guṇāḍhya. *Paris*, 1906. 8°.

Extrait du Journal Asiatique, 1906.

Presd. by the Author.

MacDonald, J. R. Geography of New Zealand for Senior Pupils in the Public Schools, Scholarship Candidates, and Pupil Teachers...With...maps and...illustrations.
Wellington, 1903. 8°.

Presd. by the New Zealand Government.

Manchester—*University of Manchester.* Economic Series, No. 2. Cotton spinning and manufacturing in the United States of America. A report ..By T. W. Uttley.
Manchester, 1905. 8°.

——.——Lectures, No. 3. Bearing and Importance of Commercial Treaties in the Twentieth Century. A lecture...By Sir T. Barclay. *Manchester*, 1906. 8°.

——.——Medical Series, No. 4. Course of Instruction in Operative Surgery...By W. Thorburn. *Manchester*, 1906. 8°.

Presd. by the University.

Morgan, J. de. Les Recherches Archéologiques leur but et leurs procédés. *Paris*, 1906. 8°.

United Provinces of Agra and Oudh District Gazetteers. Vol. VIII, Agra. *Allahabad*, 1905. 8°.

Presd. by the Govt of India, Home Dept.

33. *Parasites from the Gharial* (Gavialis gangeticus, Geoffr.)—*By* Dr. von Linstow, *Goettingen. Translated by* Paul Brühl. *Communicated by* N. Annandale. (With 1 plate.)

[The specimens on which Dr. von Linstow has been kind enough to furnish the following report were obtained from two Gharials which died recently in the Calcutta Zoological Gardens. The stomach of one of these also contained an undetermined *Ascaris*. There is no reason to think that the death of the reptiles was in any way due to the parasites.—N. A.]

Nematoda.

Micropleura vivipara, nov. gen., nov. sp.

Fig. 1–2.

From the mesentery:

The genus Micropleura is related to Filaria; the anterior end is provided with neither teeth nor lips; the lateral lines are low and narrow and are without a canal; an excretory pore is wanting, the genus belonging to the Resorbentes; the caudal end is rounded; the male has, on each side, a thickening ending in a papilla; the female is viviparous, and the vulva is not far distant from the middle of the body; spicules of equal size. The muscular system is strongly developed; the lateral lines are feeble, broader outwardly than inwardly, occupying only $\frac{1}{2\,4}$ of the circumference of the body; the anterior end is roundish with 6 papillæ which are arranged in a circle and are little prominent; the oral aperture is small and circular; the length of the œsophagus amounts to $\frac{1}{7\cdot3}$ of the total length of the body in the male, and to $\frac{1}{7\cdot4}$ in the female; it commences with a vestibulum which is about one-fourth the length of the œsophagus; the cuticle is smooth; the nerve-ring is situated at the end of the vestibule.

The male is 35 mm. long and 0·72 mm. in diameter; $\frac{1}{5\,8\,0}$ of the total length of the animal is occupied by the caudal end; the latter bears ventrally on each side three small papillæ arranged in an arc, further one postanal papillæ placed on a roundish elevation, on each side, and behind these on one side of the short tail a small papilla; spicules 0·47 mm. long.

The female attains a length of 37 mm. and a width of 0·79 mm.; the tail measures $\frac{1}{1\,3\,5}$ of the total length; the vulva is situated somewhat in front of the middle of the body; it divides the length of the body in the proportion of 5 : 6; attached to the front and back of the uteri are ovaries the length of which amounts to $\frac{1}{1\,6}$ of the length of the body; the sexual organs leave about one-tenth of the body free in front as well as behind. The embryo is 0·57 mm. long and 0·017 mm. in diameter; the cuticle is marked with sharply defined transverse rings, and the caudal end is long and fine-pointed; the anterior end is rounded.

Typhlophoros lamellaris, nov. gen., nov. sp.

Fig. 3–5.

From the stomach :

The genus Typhlophoros also belongs to the Resorbentes; the lateral lines are without a canal; they are broad and low, and occupy about $\frac{1}{6}$ of the circumference of the body; the anterior end has 3 lips, and behind these is a cuticular thickening consisting of longitudinal ribs; the lateral lines are raised into longitudinal ridges; on the dorsal side of the œsophagus a cæcal prolongation of the intestines extends right to the anterior end of the body; the males possess two equal spicules. The cuticle is smooth; the anterior end of the body has three lips which are triangular and narrowed at their base; the pulpa is wider in front; the dorsal lip bears two papillæ: behind it is a cuticular thickening which consists of sixteen finely and transversely striated longitudinal ridges, 0·12 mm. long; caudal end pointed; the longitudinal ridge which runs along the lateral lines has an equilaterally triangular cross-section; the intestines possess a high epithelium; in the parenchyma of the intestinal wall occur deep-black oval nuclei.

The male is 11 mm. long and 0·31 mm. in diameter; the caudal end is $\frac{1}{141}$ of the length of the body; on each side of it are placed four preanal papillæ; the equal-sized curved spicules measure 0·60 mm.

In the female, which is 16 mm. long and 0·32 mm. in diameter, two roundish projections are situated in front of the anus, the caudal end occupies $\frac{1}{80}$ of the whole length of the body; the vulva is placed somewhat in front of the middle of the body and divides the length in the ratio of 4 : 5; the caudal end is curved towards the dorsal surface; the eggs have a thick shell; their length is 0·073 mm., their breadth amounts to 0·062 mm.

LINGUATULIDÆ.

Porocephalus indicus, nov. sp.

Fig. 6-10.

From trachea and lungs:

Only females have been found. Rather young specimens are 20 mm. long and 2 mm. broad; behind the thin anterior end the body is thickened and spindle-shaped, attaining a width of 1·18 mm.; behind this it contracts to a narrow neck 0·79 mm. in diameter; older animals are 24 mm. long and 5 mm. in diameter; the diameter here is nearly uniform. On the ventral side the cuticula is transversely ringed at regular intervals of 0·44 mm., the rings occupying $\frac{3}{23}$ of the circumference; the muscle-fibres run in four directions, transversely, longitudinally, and obliquely in two directions making equal angles with each other; the anterior and posterior ends are roundish. On the lateral edges of the rings there are posteriorly finger-shaped prolongations, which become smaller and

smaller further back, but which can be traced far backwards; exteriorly they possess an annular chitinous thickening (fig. 9); at the anterior end there lies beneath the cuticle an oval ring which is provided in front and behind with a prolongation (fig. 8) and on the right and left of it with two hooks on each side which are directed frontwards and outwards and the points of which project freely; their length is 0·15 mm. The intestinal canal opens at the posterior end; the vaginal aperture is situated closely in front of the anus; the vagina is 1·1 mm. long and 0·044 mm. wide, whilst the width of the uterus, the numerous convolutions of which fill the body-cavity, amounts to 0·16 mm.; the eggs possess a thick hyaline envelop (fig. 10); their length amounts to 0·052 mm. on an average, their width to 0·044 mm., the yolk attaining a length of 0·026 mm. and a width of 0·016 mm. We owe to A. E. Shipley an admirable account of the Linguatulidæ, "An attempt to revise the family Linguatulidæ," in *Arch. de Parasitologie*, vol. I, Paris, 1888, pp. 52-86.

EXPLANATION OF PLATE.

(*s* lateral line, *m* muscular system.)

Fig. 1–2.—*Micropleura vivipara*: 1, caudal end of male; 2 cross-section of lateral line.

Fig. 3–5.—*Typhlophoros lamellaris*: 3, anterior end; 4, caudal end of male, right side; 5, cross-section through lateral line.

Fig. 6–10.—*Porocephalus indicus*: 6, older specimen, and 7, younger specimen, natural size; 8, anterior end, ventral surface; 9, cuticular prolongation; 10, egg.

34. *On some Freshwater Entomostraca in the collection of the Indian Museum, Calcutta.*—*By* Robert Gurney. *Communicated by* N. Annandale. (With 2 plates.)

The Entomostraca here dealt with were kindly entrusted to me for examination by Dr. Nelson Annandale, Deputy Superintendent of the Indian Museum. They comprise a number of Phyllopoda, Cladocera and Copepoda, and one Ostracod, some collected by Dr. Annandale himself, and others forming part of the Museum collection.

Our knowledge of the Entomostraca of India is most meagre; apart from the Phyllopoda, of which several have been recorded by Baird and Sars, we know practically nothing, and it is impossible at present to make useful comparisons with the fauna of other countries. Though I am able to add 14 species to the Indian fauna, the list is obviously too incomplete to be of use to students of Geographical Distribution. The only point of importance which arises from the study of these collections is the completely Palæarctic character of the species contained in the three collections from Chitral and Sind. The Chitral district belongs clearly to the Palæarctic Region, but Sind is generally included in the limits of the Oriental Region, though no doubt having the characters of a border-land. I cannot, of course, lay much stress on the evidence of the single species—*Branchipus pisciformis*, Schaeff., which I record from there, but the genus, as at present restricted, has not been found hitherto outside the Palæarctic Region.

PHYLLOPODA.

1. Limnetis brachyura (O. F. Müller).

Several specimens, mostly females, from Shandūr lake, Chitral; 12,000 feet (Chitral Mission).

2. Estheria davidi, Simon.

See G. O. Sars, *Ann. Mus. St. Petersb.*, VI, 1901.

This species was first recorded by E. Simon (1886) from Peking. It has since been redescribed by Prof. Sars from specimens brought from the Western slopes of the Chingan Mountains in Eastern Mongolia. Several specimens, agreeing completely with the description given by Sars, were collected by Capt. R. E. Lloyd, I.M.S., at Gyantse in Thibet. The species has not hitherto been found outside Asia.

3. Estheria indica, n. sp.

Description—

The shell is of the same shape and appearance in both sexes. Seen laterally (Fig. 2) it is elliptical in shape, the height about two-thirds of the length; the umbones very prominent,

situated near the anterior extremity. The dorsal margin is short and straight and ends posteriorly in a sharp angle: the anterior, ventral and posterior margins form an even curve. Seen dorsally, the shell is narrow, the greatest width in front, on a level with the umbones. The valves are thin and rather transparent, marked with about 20 very distinct lines of growth, the marginal lines closely crowded. The spaces between the lines are very faintly punctate and traversed by what appear to be canals, ending distally in little refringent protuberances (Fig. 2*a*.) These protuberances are more marked along the peripheral lines and give these lines of growth a distinct beaded appearance, the canals at the same time giving an appearance of radial striation. The margin of the shell is beset with short hairs, as are also the last few lines of growth posteriorly. In all the specimens these hairs are largely broken off, so that their distribution is not easy to determine accurately.

The head is separated from the body by a deep sulcus (Fig. 1); the rostrum is narrow and minutely emarginate at the extremity (Fig. 3). The eyes are not quite confluent.

The first pair of antennæ have about 15 rather irregular lobes (Fig. 8). The second pair of antennæ (Fig. 5) have all joints in the anterior branch and 12 in the posterior. There are 20 pairs of branchial legs, the posterior pairs exceedingly minute (Fig. 4). The sensory appendage of the fifth endite is nearly as long as the sixth endite in the female (Figs. 9 and 10), but it is two-jointed, and considerably longer than the sixth endite in the male. The prehensile appendages of the male are of the usual form (Figs. 7 and 8).

The dorsal edge of the tail is armed with a series of short spines regularly diminishing in size from in front backwards (Fig. 4). The fifth segment of the body is produced dorsally into a small elevation ,bearing a seta; the sixth and following segments are all similarly produced, but the elevation, becomes broader and bears more spines, finally dying away in the last seven segments and leaving each segment armed dorsally with a short strong spine and one or two accessory spinules.

Size of Shell.

	Length.	*Height.*
Male:	3·0—3·25 mm.	1·85—2·0 mm.
Female:	3·25—3·75 mm.	2·0—2·25 mm.

Locality—

Mandapam, Pamben Passage, South India.

Collected by Dr. Annandale in a small rain-pool in sand, devoid of vegetation. The pool had been filled a week before by a shower of rain.

The species differs considerably from any of the species of Estheria hitherto described from India. In the outline of the shell it has some resemblance to *Estheria boysi*, Baird, but the

size, sculpture and number of lines of growth are very different. The only species from which there can be any difficulty in separating it, is *Estheria mexicana*, Claus. It may be distinguished by the rather more prominent umbones, sharper posterior dorsal angle of the shell, and smaller number of joints in the second pair of antennæ. The sculpture of the shell of *Estheria indica* resembles very closely that of *Estheria mexicana* as figured by Packard (1883, Pl. xxiv, Fig. 6).

4. Cyclestheria hislopi (Baird).

(See Sars, 1887.)

One specimen of this remarkable species was taken by Dr. Annandale in a small tank at Calcutta about half an acre in extent and containing a good deal of vegetation. First recorded by Baird in 1859 from Nagpur, it has since been found in Ceylon, Celebes, Sumatra, Australia (Queensland and Victoria), East Africa, and Brazil. It is the sole representative of what is probably a very primitive genus, and in its structure, life-history and distribution it is perhaps the most interesting of all Phyllopods.

5. Branchinecta orientalis, Sars.

The collection contains three specimens of this species taken by Capt. R. E. Lloyd, I.M.S., at Gyantse, Thibet. The specimens described by Prof. Sars (1901) were found in Lake Chunta-nor, Eastern Mongolia. The Thibetan specimens agree fully with the description given by Prof. Sars, with the exception that the furcal branches are relatively a little longer.

6. Branchipus pisciformis, Schaeffer.

Syn. *B. ledoulxi*, Barrois, 1892.

A number of specimens of this species contained in the collection are labelled "J. A. W. Murray, Sind." They differ slightly from the type in having a few chitinous hooks on the tip of the penis of the male; and in having the tooth on the inferior antennæ somewhat more prominent. In these respects they approach *Branchipus ledoulxi*, Barrois, and are in fact a link between the latter and *Branchipus pisciformis*, Schaeff. I regard *B. ledoulxi*, for this reason, as not sufficiently distinct to rank as a separate species. Hitherto the species has only been recorded from parts of Europe, Algeria and Syria, so that the present record is a considerable extension of its range to the eastward.

7. Streptocephalus dichotomus (Baird).

Syn. *S. bengalensis*, Alcock, 1896, and *Chirocephalus stoliczkæ*, Wood-Mason MSS. See Sars, 1900.

I have had the opportunity of examining the types of *Streptocephalus bengalensis*, Alcock, consisting of one male and one female-

specimen, and I think there can be no doubt that they should be referred to Baird's species, *S. dichotomus*, as it has been redescribed by Prof. Sars (1900). I cannot detect any important difference between the species. There are also some rather dilapidated specimens in the collection labelled "*Chirocephalus stoliczkæ* Wood-Mason (Cutch)," [1] and these are also in reality *Streptocephalus dichotomus*. They do, however, differ rather markedly from the type, and I think it is perhaps advisable to consider them as constituting a variety to which the name *Streptocephalus dichotomus*, var. *simplex* may be given. The variety differs from the type in the following respects. In the second antenna of the male the ventral apophysis is very long and straight (Fig. 11) ; there are only three sickle-shaped filaments on the basal part of the second joint ; the anterior terminal branch is simple and undivided, armed along the greater part of its length with regularly placed recurved spines. The accessory branch of the second joint agrees with the type. The penis, in its everted condition, is extremely long, reaching to the end of the fourth segment of the abdomen and armed with two rows of small spines. In two of the three specimens the penis is retracted, and has the form of a simple stout curved process.

The female I have not seen.

CLADOCERA.

8. Daphnia fusca, n. sp.

Description of female—

Shell elongated oval in shape, bluntly pointed behind in the middle line, but without a spine in the adult condition (Fig. 12). The young are provided with a long toothed spine, sometimes amounting to one-third of the total length, but the spine appears to shorten and disappear with age. The edges of the valves are quite smooth, but their surface is marked with oblique lines intersecting to form rhombic areas. The dorsal part of the head is reticulated in the same way, but over the eyes the cuticle is finely striated. The head is comparatively small, about one-fifth of the total length. without any crest, and is separated from the body by a very slight depression. The front is nearly straight; the rostrum long, deflexed and obtusely pointed. The fornix is rather prominent and continued over the eye. It is also prolonged slightly over the anterior part of the valves as an incipient secondary fornix. The eye is large. with the crystalline cones almost embedded in pigment. The first pair of antennæ are large, and project considerably from the posterior margin of the head. The second pair are large and strong, the basal portion very minutely scaly along its anterior edge. The natatory setæ are about as long as the rami and do not reach to the posterior end of the body. The postabdomen has

[1] [I have inserted the locality, of which Mr. Gurney was unaware, from records in the Museum.—N. Annandale.]

the dorsal edge slightly sinuate, bearing about 17 short teeth, the anterior 5 or 6 decreasing in size (Fig. 13). The terminal claws are rather long with a basal comb and a row of fine cilia (Fig. 14). There is an accessory comb composed of 7 or 8 teeth on the postabdomen itself just at the base of the claws. Of the dorsal processes of the abdomen, the anterior one is about twice as long as the next one, and clothed with cilia.

The animal is of a deep reddish-brown along the back, shading off to a faint tinge ventrally.

Length: 2·75—3·3 mm.

Locality—

Kang Kul (Chitral Mission).

This Dapnia is evidently closely allied to *Dapnia atkinsoni*, Baird, but, so far as the specimens which I have examined go, it is sufficiently distinct. In view of the great local and seasonal variability of the Daphnias, the making of new species has become a rather speculative proceeding and it is unfortunate that in this case I have not had the male and ephippial female for comparison; but, on the evidence available, I think I have no course open to me but to describe the species as new.

9. Simosa elizabethae (King).[1]

See Sars, 1888.

This species, which differs very slightly from *S. vetuloides*, Sars, is a widely-distributed one, being recorded from Australia, Ceylon, Sumatra, Java, Siam and China. The specimens which I have examined were taken by Dr. Annandale in Kyd Street Tank in Calcutta, on April 5, 1905, and Jan. 21, 1906. It was abundant on the first occasion, but rare on the second.

10. Ceriodaphnia rigaudi, Richard, 1894.

Dr. Annandale has sent me specimens of this species taken in his aquarium in Calcutta, and I found several specimens in a collection made in a brackish pool at Port Canning near Calcutta. In the latter collection they were associated with various typical marine Copepods, Amphipods and Caridea. This species has a wide distribution, being found in Palestine, Indo-China, Sumatra, New Guinea, South Africa and Brazil.

11. Scapholeberis kingi, Sars, 1903.

Found abundant in Kyd Street Tank, Calcutta on Jan. 21, 1906. In the majority of specimens the sculpture of the shell is by no means as well marked as Prof. Sars describes it as being; in fact in some specimens the striation of the shell is not easy

[1] For the name Simosa in place of Simocephalus, Schödler, see Norman, 1903.

to see in a lateral view. Viewed from the dorsal side, on the other hand, the transverse ridges are sometimes very prominent. Except for its small size, *Scapholeberis kingi* appears to me to be inseparable specifically from *S. mucronata* (O. F. Müller), though it should probably rank as a variety of that species. I have carefully examined the setæ of the flattened ventral margin of the shell and find that they agree in almost all respects with the account given of them for *S. mucronata* by Mr. Scourfield (1894). The setæ of the outer of the two rows are about 26 in number. Of these the first 6 are inserted very close together on a line curving inwards towards the edge of the shell. Each seta is tubular, with a short basal branch and dividing distally into two larger branches. One branch is directed backwards while the other is a continuation of the seta forwards and inwards so that it has a semicircular curve. Along the outer edge of the two distal branches spring several exceedingly delicate hairs, but I cannot see that they have the tuft-like arrangement described by Mr. Scourfield. The 7th and 8th setæ are like the first 6 though placed a little wider apart, and differing in having no basal branch. On the other hand a minute hair springs from the shell near their bases and is probably the equivalent of this basal branch. The eighth seta has delicate hairs along both its outer and its posterior sides, and the seta at its base also has them on its posterior side. As in *S. mucronata*, there is a line of excessively faint radial markings running round beyond the ends of the anterior setæ, and, as it were, enclosing them. Mr. Scourfield believed these markings to indicate "a number of imbricated hyaline scales supported by the setæ" (1894, p. 8). He considered it possible that the hairs arising from the setæ are really stiffening corrugations in the hyaline scales. From the presence of these "hairs" on the posterior edge of the eighth seta only, I think myself that in these anterior setæ there are no separate scales, but that there is one lamella the anterior series of (in this case) 8 setæ. The setæ following this series probably support each a separate, but overlapping, scale. The next 4 (9-12) are all two-branched; but from the 13th to the 24th they are all simple, though bearing a few "hairs." The 24th, 25th and 26th are much longer, and the 25th has a short basal branch bearing a tuft of "hairs."

Mr. Scourfield informs me that in a West Australian species probably identical with *S. microcephala*, Lillj., the arrangement of these setæ differs considerably from those of *S. mucronata*, and I have shown (1903) that in *S. aurita*, Fischer, the modified setæ are wholly absent. It is probable, therefore, that these setæ will be found to afford a reliable basis for discrimination of species, and, if this is so, then the species with which we are now dealing cannot be separated from *S. mucronata* (O. F. Müller).

12. Chydorus sphæricus (O. F. Müller).

Locality—

Kang Kul—Chitral Mission.
A species of world-wide distribution.

COPEPODA.

13. Cyclops strenuus, Fischer.

Several specimens, mostly immature, were associated with *Daphnia fusca* in the Kang Kul collection.

Cyclops strenuus is a typically Northern species, which has not, so far as I know, been found South of Palestine.

14. Cyclops viridis (Jurine).

One or two specimens were found in the Kang Kul collection. It appears to be confined to Europe, North Asia and North America.

15. Cyclops leuckarti, Claus.

Taken by Dr. Annandale in the Kyd Street Tank, and in a brackish pool at Port Canning near Calcutta.

Distribution: world-wide.

16. Cyclops prasinus, Fischer.

Taken in the Kyd Street Tank, Calcutta. Recorded from all parts of the world.

17. Cyclops phaleratus, Koch.

Kyd Street Tank, Calcutta.

Distribution: Ceylon, Australia, New Guinea and South America.

18. Diaptomus bacillifer, Kœlbel.

Kang Kul—Chitral Mission.

A species characteristic of Northern and high mountainous regions.

OSTRACODA.

19. Stenocypris malcolmsoni (Brady).

A number of specimens were sent me by Dr. Annandale from his aquarium in Calcutta. It has been recorded from Central India, Ceylon, Queensland and East Africa.

[Both this year and last this Ostracod has become exceedingly abundant in aquaria at the beginning of the hot weather. In winter it disapppears. Its appearance has coincided roughly on both occasions with that of the Protozoon *Opercularia nutans*.—N. Annandale.]

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DESCRIPTION OF THE PLATES.

(Plates 4 and 5.)

Fig. 1. *Estheria indica*, n. sp. Side view of male. ×26.
" 2. " " Left shell of male. ×20.
" 2a. " " Part of the posterior region of the shell along 14th and 15th lines of growth.
" 3. " " Head of female from dorsal side. ×37.
" 4. " " Posterior part of body of female. ×37.
" 5. " " Second antenna of female. ×37.
" 6. " " Part of first leg of male. ×57.
" 7. " " Part of second leg of male. ×57.
" 8. " " First antenna of male. ×64.
" 9. " " Leg of 10th pair, female. ×45.
" 10. " " 5th endite of leg of 11th pair of female. ×150.
" 11. *Streptocephalus dichotomus*, Baird var., *simplex*. Head of male from side. ×8.
" 12. *Daphnia fusca*, n.sp. Side view of female. ×26.
" 13. " Postabdomen. ×64.
" 14. " Terminal claw of postabdomen. ×260.
" 15. *Scapholeberis kingi*, Sars. 7th and 8th setæ of outer row on anterior edge of shell. × about 1000.

35. *Some Street Cries collected in Persia.*—*By* LIEUT.-COL. D. C. PHILLOTT, *Secretary to the Board of Examiners.*

Persia is the very home of figurative language, and striking examples are to be found even in the cries of street-vendors. The following were collected in Kirmān:—

Kerosine oil. Castor oil.

The vendors of kerosine oil cry *Nafṭ-ī dāram miṣl-i-gulāb*, "A naptha have I like rose-water"; while the sellers of castor oil (for burning) say, "*Yā shāh-i chirāgh! Yā shāh-i chirāgh*," "Oh king of lamps! Oh king of lamps!"

Fruits: sweets.

Fruits and sweets are sold to a cry of *Quvvat-i bāzū, quvvat-i pā*, "Strength to your arms, strength to your legs."

Figs.

For figs alone, there is a somewhat similar cry, *Quvvat-i zānū anjīr ast*, "Strength to the knees are figs." 'Strength to the knees' perhaps means no more than 'light refreshment,' for a guest is sometimes invited to stay and eat by the polite but colloquial phrase, "*Yak chīz-ī bi-khur ki quvvat-i zānū paidā kunī*, "Eat just a little to give strength to your knees." The idea seems to be that the refreshment will give the guest the necessary strength to continue his journey. Another cry for figs is *Anjīr! anjīr! bulbul-i bāgh-i Bihisht*, "Figs! figs! nightingales of the Garden of Paradise."[1]

Pomegranates.

For pomegranates there seem to be many cries: *Anār dāram, anār-i bāgh-i Bihisht*, "Pomegranates have I, pomegranates of the Garden of Paradise;" *Nār*,[2] *bāb-i dil-i bīmār*, "Pomegranates fit for the sick." A fine and esteemed variety of pomegranates called *atābakī* is vended to the cry of "*Atābakī dāram nār, atābakī dāram nār.*"

Grapes.

For grapes, *Ṭilā dāram mushtarī*, "Gold have I, oh buyer!"

Cucumbers.

For cucumbers, *Ay qand-i tar khiyār*,[3] "Oh liquid sugar, cucumbers!"

Mulberries.

The chant for mulberries is, "*Bīdāna nabāt; bīdāna āb-i ḥayāt; bīdāna shakar nabāt; bīdāna; bi-yā, lazzat mī-barī az rūḥ*, "Seedless mulberries, sweet as candy[3]; seedless mulberries, like the water of life; seedless mulberries, like sugar and candy; mulberries; oh come! thou wilt delight thy soul." Black mulberries are also sold to *Mīva-yi ṣafrā-bur, shāh-mīva*, "Bile-removing fruit, the king of fruits!" and white mulberries to *Nuql-i hil-a* (i.e., *hil ast*) "Sugared cardamoms are here."

Plums.

For plums a cry is *Āy ṣafrā-shikan ālū*, Oh plums, a cure for bile!"

Halvā.

For *ḥalvā* of dates, *Āy ḥalvā-yi kharak*.[4]

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1 *i.e.*, Heaven; not the Garden of Eden.

2 *Nār*, corrup of *anār*; pomegranates are often prescribed by *ḥakīms*.

3 *Qand* is loaf sugar, much esteemed by modern Persians, by whom all other sugars are rather despised. Some Persians, however, consider loaf sugar unclean (*najis*) partly because it is said to be clarified by bones. *Nabāt* or sugarcandy has not these objections. There are also a few old-fashioned Persians who will not take tea, etc., if it has been purchased from a Hindu.

4 *Kharak* is a dried date.

Sweets.

For sweets, *Āy pashmak, ay ḥalvā-yi ārda.*[1]

Pistachio nuts.

Dāmghān (pronounced Dămghūn) and *Simnār* near *Mash-had* are noted for their pistachio nuts, so *Pista-yi Damghūn, mushtarī*, "Pista nuts from Damghūn, oh buyer" is a natural cry. A general cry for nuts, melon and pumpkin seeds and other edible seeds that are eaten parched and salted is, *Hama 'ajīl dāram u bi-shikan.*[2]

Rams.

At the *'Īd-i Qurbān* rams are usually sacrificed, rarely camels, and never kine [3] as in India. It is a common belief that, on the Day of Resurrection, the sacrificer will ride from the Judgment Plain into Heaven on the very animal he sacrifices at this festival. Hence rams are sold to the cry of *Shākh-ash bi-gīr savār shau*, "Hold it by the horns and ride it."

Other common cries are:—

Tripe.

Āy sīrā'ū, "Oh tripe!"

Water.

Bi-nūsh bi-yād-i shahīd-i Karbalā, "Drink in memory of the martyr of Karbalā."[4]

Tea and Cinnamon Tea.

Āy chāhī! dār-chīn nabāt! "Oh tea! and sweet cinnamon tea!"

Cloths (hawked in villages only).

Āy qamīṣ dāram, pārcha dāram, shīla dāram, "Oh longcloth have I, cloths have I, *sālū* [5] have I!"

Pins and needles (usually hawked by Jews).

Āy sūzan u sanjāq; angushtāna, yarāq! "Oh needles and pins; thimbles, and gold and silver lace!".

Scissors and embroidery (in villages only).

Āy miqrāẓ, āy yarāq-i dam-i chādar, "Oh scissors! Oh gold and silver lace for trimming chādars![6]

Antimony.

Āy surma-yi sang, āy surma-yi sang, "Oh antimony stone![7] Oh antimony stone!"

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[1] *Pashmak* is a white sweetmeat like hair or jute fibre. *Ḥalvā-yi ārda* is made of sesame seed, sugar, flour, and butter. These two sweets are always sold together.

In India this sweet is called *ilāchī-dāna.*

[2] *Ājīl P*, and *'ajīl A.* is a term applied to nuts, almonds and edible seeds: it was first used for *gazak-i sharāb*, 'anything eaten with wine.' *Bi-shikan* Impera. "break," is here an adjective or substantive.

[3] The Shī'ahs always sacrifice uninjured males: a gelding or an animal with a defective horn or a cut ear would be rejected. Sunnīs sacrifice all three sexes.

[4] *i.e.*, Ḥusain, slain at Kerbela. He was wounded in the mouth by an arrow when he stooped to drink in the Euphrates.

[5] *Shīla* is vulgar for *shalla.*

[6] The Zardushtī women wear a special *chādar* without *yarāq.*

[7] *Surma-yi javāhir* is a valuable collyrium supposed to be compounded of jewels.

Āy davā-yi mihr u muḥabbat,[1] "Oh medicine for love and affection." **Love Philtres.**

Āy pūl-i buz! āy pūl-i buz,[2] "Oh money for goats! Oh money for goats!" **Live goats.**

Āy barra-yi parvār! āy barra-yi parvār, "Oh fatted lambs! Oh fatted lambs!" **Small lambs.**

Ay gāb-i kārī, "Oh ploughing bulls." **Bulls (for the plough).**

Āy gāb-i shīrī! āy gāb-i shīrī, āy gāb-i shīrī, "Oh milch cows! Oh milch cows! Oh milch cows!" **Cows.**

Āy khurūs-i Lārī, "Oh cocks of Lār."[3] **Cocks.**

Āy murgh-i tukhmī, "Oh laying hens!" **Hens.**

Āy jūja! āy jūja,[4] "Oh chickens! Oh chickens!" **Chickens.**

Āy bulbul i khwānanda, āy bulbul-i pur chahcha[5] "Oh singing bulbuls! Oh nightingales in full song!" **Nightingales.**

Āy hadīya-yi Qur'ān, "Oh presents of Qur'ān!" To sell a Qur'ān is impious; hence it is offered as a present, the receiver giving a present of money in return. When a vendor of Qur'āns cries his "presents," the following little comedy is enacted: The purchaser, probably a woman, will enquire, *In Qur'ān chand hadīya mī-khwāhad*, "How many presents for this Qur'ān?" The reply will be, *Bi-rizāmandī-yi Khudā*, "As God wills." The woman then reverently lifts the volume, kisses it and produces some security, telling the "giver" to call again. She next consults a *mullā* who perhaps says, "*Panj tūmān hadīya dārad*, "The present you should give is five *tūmāns*." The "giver" calls for his "present," and, if dissatisfied, he will say, *Bi-panj tūmān hadīya namī-diham*, "I won't make you a present of it for five *tūmāns*." **Qur'āns.**

Jews[6] that buy old clothes, broken or discarded articles, cry *Ana muna ho?* (i.e., *kuhna muhna hast?*) "Any old rubbish?" **Old clothes.**

A modern cry in Tehran is the "*Visk, Visk!*" of the shoe-blacks—at least so Persians inform me. The origin of the cry is doubtful. **Shoe-blacks.**

For the street cries of Cairo, *vide* Lane's "Modern Egyptians," Chap. XIV.

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[1] Persian form of *maḥabbat*.

[2] *Buz* is properly the female: the he-goat is *chapish* or *narī*.

[3] *Lār* is famous for its large breed of poultry. Poultry are always purchased alive.

[4] *Jūja* modern for obsolete *chūza*: the latter is still in use in India and Afghanistan.

[5] *Chahcha* is the spring song when the bulbul is in love, as opposed to *rīza-khwānī* a bird-fancier's term for the low warbling before the cage-bird comes into full song.

[6] Such Jews when hailed are styled *Mullā* or *Khwāja*. In Calcutta the purchasers of old articles are called *bikrī-wāla* and are Hindus, not Jews.

36. *A new Gecko from the Eastern Himalayas.*—*By* N. Annandale, D.Sc., C.M.Z.S.

Less is known of the herpetology of the Himalayas than is generally realized, and the discovery of a new form even in so well explored a locality as the Darjiling district is not surprising, although far more collecting of Reptiles has been done in this part than in most parts of the range. The new species is represented by a single specimen recently taken by myself in a European house a-Kurseong (5,000 ft.). It is a typical member of the genus *Gymnodactylus*, of which two species (both extremely rare) have hitherto been recorded from the Himalayas, *viz.*, *G. fasciolatus* from Simla, and *G. lawderanus* from Kumaon. *G. himalayicus*, as I propose to name the Darjiling form, belongs to a group in the genus which also includes *G. khasiensis* from the Khasi Hills and Upper Burma, *G. marmoratus* from the Malay Peninsula, Sumatra, etc., and *G. rubidus* from the Andamans. On the whole it seems to be more closely related to the Malayan species than to either of its other allies.

Gymnodactylus himalayicus, sp. nov.

Diagnosis—

Head large, rather narrow, depressed, ovoid; snout slightly longer than orbit, obtusely pointed; forehead concave. Habit slender; digits compressed throughout; tail slightly longer than head and body, rounded, tapering. Dorsal surface of head and body granular, with numerous small conical tubercles on the body, base of head and hind limbs; on the back these tubercles tend to be arranged in 16 irregular lines: they are very much smaller than the ear-opening. Ventral scales, small, leaf-shaped, imbricate; about 35 across middle of belly. No lateral fold or enlarged scales in its place. Rostral grooved; nostril between rostral, first labial and several small scales; ten upper and ten lower labials. Ear-opening ovoid, slanting, one-third as large as eye. Subdigital lamellæ moderate, larger on proximal than on distal joints. Eleven præanal pores arranged in a continuous, wide, V-shaped series: the scales posterior to them, between the arms of the V, enlarged; three postanal papillæ (in the male) on either side; base of tail swollen below; no pubic groove; no femoral pores. Coloration as in *G. marmoratus*.

Dimensions of adult male—

Total length	...	111 mm.
Head and body	...	53 ,,
Tail ...	...	58 ,,
Hind limb ...	...	25 ,,
Fore limb ...	...	20 ,,
Breadth of head	...	9 ,,

This species is very closely allied to *G. marmoratus*, with Malayan specimens of which I have compared the type. It may be distinguished by its smaller size (if this is constant), more slender habit, narrower head, and larger ear-opening, by the fact that the basal joints of the digits are more strongly compressed, and especially by the number and arrangement of its pubic pores. From *G. khasiensis* the absence of a lateral fold will at once distinguish it, as its small, conical dorsal tubercles will from *G. lawderanus*.

I take this opportunity to put on record the occurrence of *Japalura yunnanensis*, Anderson, in Indian territory, having found in the Museum a fine male taken some years ago at Buxa, near the Bhutan frontier of Bengal, by a collector.

37. *Notes on the Freshwater Fauna of India. No. VIII.—Some Himalayan Tadpoles.*—*By* N. Annandale, D.Sc., C.M.Z.S.

During a recent visit to Kurseong, which is situated at a height of 5,000 feet in the Darjiling district, I was so fortunate as to obtain the tadpoles of two of the characteristic Anura of the Eastern Himalayas, of a species hitherto not recorded from the Indian Empire, and of an unidentified form of interesting structure. My visit lasted from May 21st to May 29th, and it would seem probable that the species found had spawned about the beginning of the hot weather.

The structural adaptations exhibited by tadpoles which live in the small mountain torrents of the Himalayas, are identical with those of species occurring in similar situations in the Malayan hills, but remarkably divergent *inter se*. It so happens that the three species which I found living together in such streamlets at Kurseong, illustrate three different methods by which these tadpoles are protected against the incidence of sudden floods. It is noteworthy that within the genus *Rana* a variety of larval types occur; but, as I hope to show in the present communication, the peculiarities which are so striking in certain tadpoles, have homologies in other species which cannot be detected except during life. The first tadpole I describe is not peculiar in any way, but it occurs in circumstances which apparently do not call for any structural modification.

DESCRIPTION OF TADPOLES.

1. Bufo himalayanus, Günther

Maximum total length, 27 mm.; greatest depth of tail between $\frac{1}{5}$ and $\frac{1}{6}$ of maximum total length, less than twice the depth of the caudal muscles; length of tail $1\frac{1}{4}$ that of head and body. Head flat; nostril slightly nearer the eye than the snout; eye dorsal, small, by no means prominent; spiracle sinistral; pointing backwards and upwards, very inconspicuous. Tail obtusely pointed, constricted at the base. Vent in middle line. Colour almost uniform inky black, slightly less intense on the ventral than on the dorsal surface. Dental formula $\frac{1}{1}\frac{1}{3}$. Beak in two parts, an upper and a lower; both serrated at the free edge. Lips fringed at the corners, but not on the posterior or anterior edge.

As regards the structure of the mouth, this tadpole closely resembles that of *Bufo melanostictus*,[1] from which it may be readily distinguished by its small, sunken eye and flat head.

[1] See S. Flower in *Proc. Zool. Soc.*, 1896, p. 911, pl. xliv, fig. 3, and 1899, p. 911. Günther regarded *B. himalayanus* as no more than a variety of this species.

2. Megalophrys montana, Kuhl

M. montana ; *Boulenger*, in *Annandale and Robinson, Fasciculi Malayenses, Zool.* i, p. 132 ; *Annandale, ibid.*, p. 275 ; *Weber* in *Ann. du Jard. Bot. Buitenzorg, Suppl.* ii, 1898, p. 5.

The peculiar float surrounding the mouth of this tadpole has been described in detail by Prof. Max Weber and by myself. The examples from Kurseong agree very closely with those from Malaya and Java. I was at first inclined to suspect that the Indian specimens might be larvæ of *Leptobrachium monticola* and that the larvæ of this form very closely resembled those of *Megalophrys montana*, the genus of the latter not having been recorded from Indian territory ; but in many of my specimens the hind legs are well developed and show no trace of a web at the base of the toes. In one specimen the fore legs are also well developed, and the funnel has disappeared except for a ridge along the lower lip and a tubercle at each corner of the mouth ; but the tail has hardly begun to be absorbed. The funnel has already become much reduced in size in individuals in which the fore legs are almost ready to burst through the skin. The oldest specimen agrees, so far as it is possible to say, with Boulenger's var. *aceras*.

3. Rana liebigii, Günther

Maximum total length, 56 mm. ; tail thrice as long as head and body, its greatest depth $\frac{1}{5}$ of the maximum total length, twice the depth of the caudal muscles. Head feebly arched, nostril midway between the eye and the snout ; eye small, by no means prominent, near the dorsal surface ; spiracle sinistral, pointing backwards and slightly upwards, small, surrounded by a white ring. Tail pointed gradually at the tip, not contracted at the base ; vent on the right side. Colour variable ; dorsal surface brownish, marbled in some cases with yellow ; fin membrane pale, with large, dark pigment cells, which in some specimens tend to be arranged in vertical bars ; in some specimens a dull yellow, mid-dorsal streak at the base of the tail. Dental formula $\frac{5}{1}\frac{3}{1}\frac{5}{2}$. Lips very large, enclosing a considerable cavity ; the lower lip with a complete double fringe ; a single fringe at the base of the upper lip on either side ; the beak in two parts, an upper and a lower, neither serrated.

4. Rana, sp.

Length of a specimen without legs, 26 mm. ; tail more than twice as long as head and body, its greatest depth $\frac{1}{6}$ of the total length and twice the depth of the caudal muscles. Head flat ; nostril much nearer the eye than the snout ; spiracle sinistral, pointing upwards and backwards ; a considerable glandular patch on either side behind the eye, which is on the dorsal surface. Tail gradually pointed at the tip ; the lower fin disappearing some little distance behind the vent, which is in the middle line. Dorsal surface uniform

pale grey; ventral surface dirty white. Dental formula $\frac{4\ 3}{1\ 1}\ \frac{4}{2}$.

Lower lip fringed; a large sucker on the belly immediately behind the mouth. Beak in two parts, an upper and a lower; neither serrated.

This form resembles the tadpole of *Rana latopalmata*[1] (which also occurs in the Darjiling district) but differs from it in its dental formula, fringed lower lip, and uniform coloration.

HABITS OF THE TADPOLES.

The tadpoles of *Bufo himalayanus* were found in large numbers at Kurseong and at Darjiling (7,000 feet) in small artificial ponds, and at the former locality in a large and comparatively still pool of a stream. At Kurseong young toads, in which the tail had partly or completely disappeared, were common, while at Darjiling most of the tadpoles were still devoid of external fore limbs. The young toads were considerably bigger than are those of *B. melanostictus* at the same stage.

The other three forms recorded above were taken in small mountain torrents, the largest pools of which in many cases did not contain more than a few cubic feet of water at the time they were examined. The tadpoles of *Rana liebigii* were also found in a larger pool, together with those of *Bufo himalayanus*

Although these three forms are adapted for clinging to rocks during a flood, the manner in which they are able to do so is not the same in all cases. The larva of *Rana liebigii* adheres chiefly by means of its mouth, the enlarged lips of which, as in the tadpoles of several other species, form a powerful sucker, while that of the *Rana* I have left unidentified clings chiefly by means of an additional sucker. In the former species, however, the belly as well as the mouth is applied to the surface to which the tadpole is clinging, in such a way that an individual adhering to the side of a glass vessel can be seen to have on its ventral surface a large, circular, flattened area, which only needs a raised edge to make it into a true sucker Moreover, in the unidentified species the margin of the fringed lower lip forms the anterior wall of the ventral sucker.

The method in which the tadpole of *R. liebigii* adheres to rocks and even climbs upon them, closely resembles that of a small Loach (? *Nemachilus* sp.), found in the same streams; but the Fish is able to progress more readily than the tadpole, and not infrequently makes its way up the face of a rock completely out of the water. In both cases the animal has a suctorial mouth and aids itself in clinging to more or less vertical surfaces by applying its belly to them very closely. By means of this application it is able to release the hold of its mouth for brief periods and to wriggle a

[1] See Boulenger in *Proc. Zool. Soc.*, 1893, p. 526, pl. xliii, fig. 3; and cf. Laidlaw, *ibid.*, 1900, p. 386, pl. lvii, figs. 3, 4.

short distance forwards or upwards without ceasing to cling to its support. In the larva of *Rana latopalmata*, however, and of similar forms, the mouth has become, or rather remained, an organ of adhesion of comparatively little power, while a regular sucker has been formed on the belly which has apparently no connection with the smaller sucker found in a somewhat similar position in many tadpoles at an earlier stage of development.

The tadpole of *Megalophrys montana* has neither a strongly suctorial mouth nor a large ventral sucker, but it is able to make its way up the sides of stones in a different manner. The funnel surrounding the mouth is probably homologous, to some extent, with the enlarged lips of the larvæ of such forms as *Rana liebigii*; but the homology is not complete. As I have shown elsewhere (*op. cit.*), the horny teeth with which the float or funnel is studded have an entirely different structure from those of other tadpoles, being distinctly multicellular in origin. The functional analogy between this organ and the lips of *Rana* tadpoles is remote, and the habits of the larvæ differ completely from those of the other tadpoles found in the same environment. The latter frequent the upper surface and sides of submerged stones, under which they hide themselves when alarmed; but the larvæ of *M. montana* remain, at any rate during the day, in corners at the extreme edge of the same pools, generally among the vegetable débris which collects in such places. Owing to their large and extremely muscular tails they can swim more rapidly than most tadpoles and have much the motion, as they have the appearance, of a small Silurid fish. They are able to insinuate themselves with the greatest agility into small crevices. Should they be forced into the centre of a pool, their funnel immediately expands and they float lightly on the surface; but when they are making their way into narrow cavities it is folded together and the enormous lower lip entirely covers the mouth and the snout, probably protecting these parts from injury. When the tadpole buries itself in the mud, as it does in Malaya when its pools dry up, this is also the case. Not improbably the peculiar horny teeth aid the funnel in this function (although they are not on the exposed surface when it is folded) by giving it additional strength. The lower lip also serves, however, another purpose, which has not previously been noticed. As its posterior surface, because of smoothness and considerable area, is strongly adhesive, the tadpole is able to cling to smooth, vertical objects with its assistance, and at the same time to progress up such surfaces by vigorous movements of the tail. In this way the animal climbs up the sides of stones and probably makes its way from one little pool to another.

Thus in three different species of tadpoles found together in small mountain torrents, three different methods of adhesion have been perfected. The larvæ of *Rana liebigii* adhere by the ventral surface of both lips, with the aid of the surface of the belly; those of *R. latopalmata* and another species, by means of a ventral sucker; those of *Megalophrys montana*, by means of the posterior surface of the lower lip.

38. *Preliminary note on the Chemical Examination of the Milk and Butter-fat of the Indian Buffalo.*—*By* E. R. Watson, M.A. (Cantab.), B.Sc. (Lond.), *Officiating Professor of Chemistry, Engineering College, Sibpur.*

The necessity of a careful investigation of these important food-substances need scarcely be emphasised. In all countries, civilised, in the western sense of the word, it is necessary to carefully supervise the food-supply and to see that it is not deleteriously adulterated. As a preliminary it is necessary to very carefully analyse wholesome samples of the various food-stuffs in order to set up standards for future comparison. The figures which have been arrived at in Europe for the composition of the milk and butter-fat of the cow cannot be used as standards in India, not even for the products of the cow, still less for those of the buffalo. This has been clearly shown by the few analyses which have been published in India up to the present. (Food Adulteration, J. N. Datta, in Trans. First Indian Medical Congress, 1894, p. 275; Composition of Indian Cows' and Buffaloes' Milk, J. W. Leather, in the Agricultural Ledger, No. 19 of 1900, p. 195).

Pappel and Richmond (Trans. Chem. Soc. 57, p. 752) have made an almost exhaustive analysis of the milk and butter-fat of the Egyptian buffalo or gamoose. It was natural to suppose that the products of the Indian buffalo might approximate in character and composition to those of the Egyptian animal, and, therefore, constant reference has been made to the results obtained by these investigators.

Throughout the present work the following questions have been constantly borne in mind: (*i*) Why is it that buffalo-milk, which is richer in fat than cow-milk, commands a lower price in the market and is less esteemed as an article of food, and is it possible to explain this on chemical grounds; and (*ii*) is it possible to distinguish by chemical analysis between the milk and butter-fat of the buffalo and the same articles from the cow.

I have not attempted the estimation of the different constituents in the milk, because this is the side of the problem which has already been investigated to some extent. There was one point, however, suggested by a perusal of Richmond and Pappel's paper, which it appeared of the greatest importance to examine. These investigators had found that in the milk of the Egyptian buffalo there is no lactose, but a new sugar to which they gave the name 'tewfikose.' Such an important difference from the milk of the cow might explain the popular belief that the milk of the buffalo is less easily digested than that of the cow. Also it should be noted that the estimations of sugar in milk are generally based on the assumption that the sugar is lactose, and these estimations would need revision if this assumption were incorrect. I have, therefore, isolated a sample of the sugar from buffalo-milk for examination. In crystalline form, taste, optical

rotation, molecular weight and behaviour with Fehling's solution it is identical with *lactose* and different from the 'tewfikose' described by Richmond and Pappel.

Details of the isolation and examination of sugar—The milk used for this purpose was obtained from a buffalo in the village of Shibpur in May 1906.* The method adopted for isolation was identical with that employed by Richmond and Pappel (*loc. cit.*), *viz.*, precipitation of the proteids and fat by mercuric nitrate solution (Wiley's reagent) neutralising the filtrate with aqueous potash and passing sulphuretted hydrogen gas to precipitate mercury salts, filtering and concentrating the filtrate on the water-bath until the sugar crystallised out. It was found necessary to wash with cold water and to recrystallise from water in order to free the sugar from traces of potassium nitrate. The sugar was then dried in a desiccator over calcium chloride at the ordinary temperature. Another sample, which proved to be identical in properties, was isolated by evaporating the milk to dryness, extracting with ether, boiling with absolute alcohol and then extracting the sugar with dilute alcohol. The purification from traces of albuminoids of the sugar obtained in this way was somewhat troublesome.

Optical rotation was determined in aqueous solution :—
10 per cent. boiled solution of the sugar in a 200 mm. tube gave $a_D = +10°30'$.

	Found.	For lactose in 10 per cent. solution.
$[a]_D$	52°30′	52°30′.

Molecular weight was determined by the freezing point method. 0·4670 gms. sugar dissolved in 20 gms. water gave $\Delta = -0·118°C$.

M.W. = 366.
M.W. of lactose $C_{12}H_{22}O_{11} + H_2O$ = 360.

I have obtained the following results in the examination of several samples of butter-fat. Most of these samples I have obtained from the village of Shibpur, personally superintending the operation of milking, and preparing the butter-fat from the milk by allowing the cream to rise and then making into butter by shaking in a bottle. The butter was melted in the steam-oven and the clear fat filtered off. The samples of milk were taken chiefly in January and February, 1906, from animals with calves of different ages.

* I am informed by Mr. Dutt, Professor of Agriculture, Shibpur College, that there are no well-marked breeds of Indian buffalo, and that the names sometimes given merely refer to the localities in which the animals live.

I intend to confirm the figures given in this note by the examination of a larger number of genuine samples.

	Max.	Min.	Mean.
Reichert-Wollny figure	33§	28·9§	...
Percentage of volatile acids yielded by the fat (reckoned as butyric acid)	5·80	5·08	...
Ratio $\frac{\text{butyric acid}}{\text{caproic acid}}$	...	...	$\frac{13·2}{1}$
Percentage of soluble acids yielded by fat (reckoned as butyric acid)	...	...	4·98
Percentage of insoluble acids	...	...	88·3
Iodine absorption value	37·6	27·4	...

Most of these results have been obtained by very well-known analytical processes. The ratio $\frac{\text{butyric acid}}{\text{caproic acid}}$ has been obtained by weighing the dried potassium salts obtained on evaporating to dryness on the water-bath the titrated distillate from the Reichert-Wollny process. The weight agreed with the supposition that, practically, the whole of the acid in the distillate was butyric. Experiments with pure butyric acid showed that, on evaporating to dryness on the water-bath an aqueous solution of potassium butyrate, there was left the anhydrous salt $C_4H_7O_2K$.

These results may be translated into the more easily compre-hensible form :—

The butter-fat consists of the glycerides of the following acids in the following proportions :—

	Max. per cent.	Min. per cent.	Mean. per cent
Butyric	5·52	4·83	...
Caproic	0·42	0·37	...
Non-volatile acids soluble in water ...	...	...	0·00
Oleic	41·70	30·40	...
Palmitic and stearic	57·90	46·60	...

§ In the examination of 20 selected samples of Indian buffalo-ghee Dr. Datta (*loc. cit.*) had obtained the following values for the Reichert-Wollny figure :—Mean, 34·5 ; Max., 39·3 ; Min., 30·5.

These figures may be compared with the corresponding figures for (1) European cows; (2) the Egyptian buffalo.

	European Cow.			Egyptian Buffalo.		Indian Buffalo.		
	Max.	Min.	Mean.	Max. Min.	Mean.	Max.	Min.	Mean.
Butyric ...	3·92*	2·94*	3·52*	Not recorded.	3·75	5·52	4·83	...
Caproic ...	2·39*	1·79*	2·15*		0·94	0·42	0·37	...
Non-volatile acid soluble in water (constitution unknown) ...	...	...	0·00		2·95	...	...	0·00
Oleic	44·70†	26·20†	40·40†		36·00	41·70	30·40	...
Palmitic and Stearic	62·24‡	42·98‡	47·50‡		41·80	57·90	46·60	...
Saturated acid of which Pb. salt is soluble in ether (constitution unknown) ...	...	...	0·00		11·10	?	?	...

The following points are noteworthy :—

1. It cannot be said that the butter-fat of the Indian buffalo is more similar to that of the Egyptian buffalo than to that of the European cow. This result is unexpected.

2. The percentage of volatile fatty acids is very high. This result was also obtained by Dr. Datta. It is probably the best criterion for Indian buffalo butter-fat.

3. The volatile fatty acids are almost entirely butyric. The ratio $\frac{\text{butyric acid}}{\text{caproic acid}}$ is $\frac{13}{1}$ for the Indian buffalo; $\frac{4}{1}$ for the Egyptian buffalo; $\frac{3}{2}$ for the European cow. This result, if confirmed by further analyses, should prove of the greatest use in recognising Indian buffalo butter-fat. At present it appears possible to adulterate buffalo-ghee with a suitable vegetable oil and sell as cow-ghee. It should, however, be possible to distinguish the buffalo-ghee even in such a mixture by the high ratio of $\frac{\text{butyric acid}}{\text{caproic acid}}$.

* Calculated from Reichert-Wollny standards, together with the ratio $\frac{\text{butyric acid}}{\text{caproic acid}}$ deduced by Duclaux (Comptes Rendus, cii., pp. 1022, 1077).

† Calculated from Iodine absorption figures of Rowland Williams (Analyst, June, 1894.)

‡ Calculated from percentage of insoluble acids minus percentage oleic acid. For limits of percentage of insoluble acids, see Wynter Blyth, 'Foods,' p. 365; also Allen 'Commercial Organic Analysis,' Vol. ii, pt. 1, pp. 189 and 192.

4. Richmond and Pappel concluded from their analyses that there is contained in the butter-fat of the Egyptian buffalo, the glyceride of an acid which they did not identify, which, however, does not belong to the oleic series, but of which the lead salt is soluble in ether. My work has given results which might be interpreted as indicating the presence of a similar glyceride in the butter-fat of the Indian buffalo. I am not, however, at present convinced that these results may not be due to the difficulty of getting accurate results by Muter's method for the estimation of olein. If it should be found that such a glyceride is really present in considerable quantity, its estimation should prove a valuable criterion of buffalo butter-fat.

39. *A Parasite upon a Parasite*,—*a* Viscum *apparently* V. articulatum, *Burm.*, *on* Loranthus vestitus, *Wall.*, *on* Quercus incana, *Roxb.*—*By* I. H. Burkill.

Loranthus vestitus is quite a common parasite in the Simla Hill States, on trees of *Quercus incana;* and it makes use about Simla of other hosts also, such as *Quercus dilatata*, Lindl., and *Machilus odoratissima*, Nees (*vide* Gamble, specimens in Herb. Shibpur, and Manual of Indian Timbers, 1902, p. 583): elsewhere it lives on *Odina Wodier*, Roxb., *Schleichera trijuga*, Willd., *Randia* spp., *Elæagnus* spp. and species of Quercus other than *Q. incana* (*vide* Brandis, Forest Flora, 1874, p. 397).

Close to Ganekihatti near Simla, on a south hill face at 6000 ft., I found five small plants of a Viscum parasitic on the Loranthus, which was parasitic as usual on *Quercus incana*. The Viscum plants were small, only once branched and not yet in flower: but the cushions from which the stems arose were 1–2 cm. in diameter. Older branches had existed and died leaving their scars 4–5 mm. across: perhaps they had died in the unusual cold of the winter of 1904–05, which did so much damage to mango trees in neighbouring valleys.[1]

Viscum articulatum is a widespread mistletoe, accommodating itself to many hosts. Kurz (Preliminary Report on Forests and other Vegetation of Pegu, 1875, p. 43) calls it one of the most troublesome of the parasites of the mixed Forests of Lower Burma, and Blume and Treub (the former in Bijdragen tot de Flora van Ned. Indie, 1825, p. 667, and the latter in Ann. du Jard. bot. de Buitenzorg, iii., 1883, p. 3) say that it is very common at Buitenzorg in Java: it is certainly common in the Malay peninsula, and cannot be altogether rare in Southern India. A perennial needs a wide adaptability to grow both near Simla and in the warm forests of the Malay islands.

I have drawn together the list overleaf of plants known to be used as hosts by the Viscum. From it records which appeared to belong to *V. japonicum*, Thunb., and *V. ramosissimum*, Wall.,—confused species—have been excluded.

Viscum articulatum is there seen to be a well-known parasite of its brother parasites: but, as far as I have been able to ascertain, its double parasitism has always hitherto been noticed under circumstances of a much heavier or more distributed rainful than in the outer hills of the North-Western Himalaya, where *Euphorbia royleana*, a couple of thousand feet lower down, attests by its great abundance to the dry conditions.

But this mistletoe is not the only Loranth parasitic on another Loranth. *Viscum album* in Europe is sometimes parasitic on *Loranthus europæus* (*vide* Engler, Pflanzenfamilien, iii. pt. 1. 1889, p. 194; Hemsley in Journ. Linn. Soc. Bot., xxi., 1896,

[1] Some effects of this frost are given in a note by Mr. Atha Ram, Indian Forester, xxxii., 1906, p. 24.

Host-plants of *Viscum articulatum*.

Nat. Order.	Name.	Locality.	Authority.
Anonaceæ	?	Java	Miquel.
Ternstrœmiaceæ	Eurya	S. India.	Brandis.[2]
Sapindaceæ	Acer Campbellii, Hook. f. and Thoms.	Sikkim	Gamble.[4]
Anacardiaceæ	Rhus	?	Brandis.[2]
Rosaceæ	Prunus Armeniaca, Linn.	?	Brandis.[2]
Cornaceæ	Cornus capitata, Wall.	Simla	Gamble.[3]
Ericaceæ	Rhododendron arboreum, Sm.	? N.W. Himalaya.	Brandis.[2]
Ebenaceæ	Diospyros Melanoxylon, Roxb.	Dharwar, S. India.	Talbot.[5]
	Diospyros sp.	Central India.	Duthie.[3]
	Diospyros sp.	Bengal.	Kurz.[3]
Oleaceæ	Olea.	?	Brandis.[2]
Loranthaceæ	Loranthus pentandrus, Linn	Penang.	J. Scott.[3]
	Loranthus pentandrus, Linn.	Dutch Indies.	Korthals.[6]
	Loranthus sphærocarpus, Bl.	Dutch Indies.	Korthals.[6]
	Loranthus vestitus, Wall.	N.W. Himalaya.	above.
	Loranthus spp.	Singapur.	Ridley.[7]
	Loranthus sp.	Burma.	Kurz.[4]
Cupuliferæ	Quercus incana, Roxb.	N.W. Himalaya.	Brandis.[2]
	Quercus glauca, Thunb. (Q. annulata, Sm.)	N.W. Himalaya.	Brandis.[2]
	Quercus dilatata, Lindl.	N.W. Himalaya.	Brandis[2]
	Quercus Ilex, Linn.	N.W. Himalaya.	Brandis[2]

[1] Flora Ind. Bat., I., pt. I, 1858, p. 806.
[2] Forest Flora, 1874, p. 397.
[3] On labels of specimens preserved at the Royal Botanic Gardens, Shibpur.
[4] List of Trees and Shrubs of the Darjeeling District, 1878, p. 66.
[5] List of Trees, Shrubs, of the Bombay Presidency, 1902, p. 293.
[6] In Verhandl. van het Bataviaasch Genootschap, xvii., 1839, p. 258.
[7] In Journ. Roy. Asiat. Soc., Straits Branch, xxxiii, p. 134.

p. 307, and Mina-Palumbo in Boll. di Entom. Agrar., iii. 1896, p. 19, quoted from Just's Jahresber., 1896, i., p. 353); *Viscum album* occurs as well on its own kind (*vide* Guerin in Revue de Botanique, viii., 1890, p. 275, and elsewhere); Guerin observed it to fruit growing on a brother plant; *Viscum tuberculatum*, A. Rich., is found in Africa parasitic on *Loranthus regularis*, Steud.; and *Viscum tenue*, Engl., is found on both *Loranthus Schelei*, Engl., and *L. subulatus*, Engl., in the high forest of Usambara (*vide* Engler in Bot. Jahrbucher, xx., 1894, p. 81); while *Tupeia antarctica*, Cham. & Schlecht., is sometimes found in New Zealand on *Loranthus micranthus*, Hook.f. (J. D. Hooker, New Zealand Flora, 1867, p. 108).

Of the allied order Santalaceae one species of *Phacellaria* was collected by Griffith on a Loranthus at Mergui; another by Sir George Watt on a Loranthus in Manipur (J. D. Hooker, Flora Brit. India, iv., 1886, p. 235); a third and a fourth were collected by Sir Henry Collett in the Shan Hills on a Loranthus,[1] and on *Viscum monoicum*, Roxb., respectively (Collett and Hemsley in Journ. Linn. Soc. Bot., xxviii., 1890, p. 122).

Viscum articulatum and *tenue* are leafless, and so are the Phacellarias: but *Viscum album* and *tuberculatum* are leafy, and so is *Tupeia antarctica*, though not abundantly so. We cannot, therefore, say that double parasitism and leafiness are incompatible: yet one would think that a water supply twice fought for, *i.e.*, between the first parasite and its host and between the second parasite and the first, would be so hardly won as to lead to the need of the utmost economy of water on the part of the second parasite.

Viscum articulatum is a very variable plant and so is *Tupeia antarctica*. Engler says (Bot. Jahrbucher, xx., 1894, p. 80) that the African Loranths which grow in moist forests have larger leaves than species of the steppes. Molkenboer, a Dutch botanist, has hinted that there may be some relation between the nature of its host and the form that the parasite takes (Plantæ Junghuhnianae, 1850, p. 107): Korthals (*loc. cit.*) says that the more fortunate in circumstances is the Viscum, the broader and more leaflike are its stems. If that be so, then my specimens were most unfortunate, for there was in them an almost complete absence of wing.

It is this almost complete absence of wing that has made me to name mine above as "apparently V. articulatum."

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[1] This Loranthus was parasitic on a Quercus. Not a single record can I find of the complete identification of all three associated plants in reported cases of double parasitism. This case and Mina-Palumbo's, above quoted, are the most completely reported, but in neither is the Quercus identified.

40. *An Old Form of Elective Government in the Chumbi Valley.*—*By* E. H. Walsh.

An interesting form of elective government exists in the Chumbi Valley which has been in force from time immemorial and is probably of very great antiquity. Although at the present time its functions are merely the local administration under the control of the *Jongpons*, the Tibetan officials at Phari, it, no doubt, survives in its present form from the time when it was the independent Government of a small republic state. Until recent years the control exercised by Tibet over the affairs of Tromo, which is the Tibetan name for the country known to Europeans as the Chumbi Valley, has been merely nominal and has consisted in the payment of an annual tribute by the Tromowas to the Tibetan officials at Phari, and the obligation to provide *ula* or transport for Tibetan officials visiting the valley, whose visits were, however, of very rare occurrence. The Tromowas (སྒྲོམ་པ་) are in fact a distinct people from the Tibetans. They never speak of themselves as "Tibetans," Po'pa (བོད་པ་) and no Tibetan ever speaks of them as Tibetans. Their language, though a dialect of Tibetan, contains many distinctive words and forms, which alone points to a separate origin, and their customs differ in many respects.

Even in Tromo itself there are two distinct races, the Upper Tromowas, who inhabit the upper portion of the Chumbi Valley, and the Lower Tromowas, who inhabit the lower or southern portion.

The dialect spoken by these two races differs, and their customs also shew marked and characteristic differences, shewing their distinct origin. To make this clear I give the following extract from the introduction to my vocabulary of the Tromowas dialect:[1] "To shew how these two peoples, living in intercourse "with one another, have maintained their distinction in other "respects than in dialect, it is only necessary to mention one or two "points of difference. Many of the Upper Tromowas are of the "old Bon-pa religion, which was the religion of Tibet before the "introduction of Buddhism, whereas none of the Lower Tromowas "are. The Upper Tromowa men wear the pigtail, whereas the "Lower Tromowa men cut the hair short like the Bhutanese. The "Upper Tromowa women wear the hair in two plaits, which are "united down the back. The Lower Tromowa women, while "making the hair in two plaits, tie these separately round the "head and do not let them hang down. In the matter of "the men's dress, too, there was a difference until recent years,

[1] A Vocabulary of the Tromowa Dialect of Tibetan by E. H. C. Walsh, Bengal Secretariat Book Depôt (page ii).

"as the Lower Tromowas wore the Bhutanese form and material "of clothing; and though all except the older men have given this "up and wear the Tibetan form of dress worn by the Upper Tro- "mowas, a few of the older men still wear the Bhutanese form of "dress.[1]

"As to their respective origins, the tradition of the Upper "Tromowas is that there were certain original inhabitants who "have always lived in the valley from pre-historic times. These "are known as *Khyim-ser-Rawa-nang-pa*, 'Those within the fence "of the golden house.' Next after these come the *Chi-pon Tsang-* "*khor*, who immigrated here from the *Khams* province of Tibet. "This is said to have been a very long while ago, and there is no "history of their coming. A second immigration known as *Nam-* "*khen-pa*, the 'sky knowers,' are said to have come from *Sakya*, "subsequently to the *Chi-pons*, though the date of their arrival is "also not known. These three classes have all intermarried and "become one people.

"The Lower Tromowas say that the original inhabitants of "the lower valley were called *Sakya-pas*, namely, 'men of Sakya,' "who were probably an offshoot of that second immigration into "Upper Tromo. Subsequently the *Ha-pas*, people of the province "of Ha in Bhutan, came in about 400 years ago with a Chieftain "named Shab-Dung Lha Rinpochhe, who held possession of the "Valley for a time, and they subsequently remained and settled "down there."

The point is of interest as shewing how the Upper Tromowas have maintained their racial distinction, which accounts for the existence of a form of electoral government peculiar to themselves.

Since 1889, a distinct but similar elective local government has existed in Lower Tromo into which it was then introduced by the Tibetans, on the model, with certain minor modifications, of that existing in Upper Tromo. The reason for its introduction was that since the Sikhim War of 1888 the Tibetans found it necessary to exercise direct control over the Chumbi Valley, and found that although the organisation of the Upper Tromo was able to supply them with any transport or supplies that their officials or troops might require, there was no such organisation in Lower Tromo, and they therefore constituted one on the same model as that which they found in Upper Tromo.

As already stated, until recent years, The Tibetan Government interfered very little with the Chumbi Valley, more than receiving their annual tribute, and in the fact that more serious criminal offences had to be referred for punishment either to the *Jongpons* or to the Government at Lhasa.

The local administration of Upper Tromo is by two officers called *Kongdus*, who act jointly and are elected for a term of three years. The election is made from the *Tsho-pas* or headmen of the villages. These *Tsho-pas* are themselves elected by their

[1] *Op. cit.*, p. ii.

villagers, but when once elected continue to be *Tsho-pas* unless the villagers were to remove their name which would only be done on the ground of old age or loss of money or position or anything else that would render them unfit to hold the office of *Kongdu*. The number of *Tsho-pas* in each village is not limited.

Once every three years on the 15th day of the 4th month, the villagers all assemble at a fixed meeting-place near Galingkha, the principal village of Upper Tromo, and present to the two *Kongdus* for the time being, a list of the *Tsho-pas* of their respective villages. For the purpose of election, Upper Tromo is divided into two divisions, one of which consists of the upper and lower villages of Galingkha and the other of the remaining seven villages of the upper valley. The *Kongdus* are elected alternately from these two divisions.

From the lists presented by the villagers the two *Kongdus* select the names of the four persons in the other division to their own, whom they consider to be the most suitable to be the next *Kongdus*. They then throw with three dice in the name of each of the four persons they have selected, and the two who obtain the highest throw are chosen as the *Kongdus* for the coming term of three years.

This ceremony takes place before an old stone altar situated under a tree, and sacred to the *Yul-Lha* or deity of the locality, before which is placed the banner which is the insignia of the *Kongdu's* office. It has no connection with the Buddhist religion, and points to an anterior origin. The two *Kongdus* thus selected then decide between themselves which is to be the *Thri-pa* (ཁྲི་པ་) or Chairman. The one who is recognised as having the superior wealth or social influence is always chosen, but if the two selected candidates should consider themselves equal, the elder man becomes *Thri-pa*. The *Thri-pa* has the right of keeping the banner in his house.

The newly-elected *Kongdus* do not enter on office at once. This is done in the eleventh month when another ceremony takes place and a *yak* is sacrificed at the stone altar already mentioned. The yak is skinned and the skin is placed in front of the altar with the head of the yak resting on the altar, and the new *Kongdus* place their hand on the bleeding skin and take an oath on the sacrifice that they will administer justice "even between their own son and their enemy." The outgoing *Kongdus* then make over to them their banner, the insignia of their office, and with the banner they take over all the rights and powers of the office. . . . . .

The *Kongdus* say that they do not hold their power from the Tibetan Government but from the *Yul-Lha*, the local deity, that they originally got the banner from him and have always held their power from him. The administration is thus theocratic as well as elective, and the god also takes part in the selection, through the result of the throwing of the dice before his altar.

The duties of the *Kongdus* to Government are to pay the annual tribute and to provide any transport or supplies that the Government may require. This falls under the following heads: *Ula*—supply of coolies; *mi-hrang*—supply of messenger; *tao*—supply of transport and riding mules and ponies; *khyem*—supply of yak transport; *tsa-thre*—supply of grass; *shing-thre*—supply of wood; *thab-yog*—supply of personal servants to officers while on tour.

The revenue paid to the Tibetan Government consists of 40 srangs (Rs. 100) for the grazing rights on the Lingma thang plain and on the hills; 120 bundles of bamboos, 60 wooden beams and 8 maunds of *tsod* leaves, which are used for dyeing. To meet these and other expenses, the *Kongdus* assess the land rent, a grazing rent, a house tax, which is really a personal tax as it is levied on the circumstances of the family and not on the value of the house, and a cattle tax. These taxes are assessed by the newly appointed *Kongdus* and remain in force for their term of office of three years. Should the amount so raised in any year not be sufficient to meet expenses, the house tax can be levied more than once in the year.

These funds are entirely under the control of the *Kongdus* and a large portion of them is spent on entertainment at the two ceremonies of the election of *Kongdus* and of their taking over charge of their office, at the quarterly meetings of the *Tsho-pas* and on any other special occasion, and in contributions to the various village *Lha-khangs* or temples, and towards religious ceremonies.

The people have absolute confidence in the *Kongdus*, and as they are men of sufficient substance, could recover from them in case of default; but I was told that such a case had never occurred. The *Kongdus*, apart from public opinion, are also restrained by the oath taken before the *Yul-Lha* on taking office, and would consider that any breach of trust in respect of the funds would bring them divine punishment and misfortune. They render a quarterly account of expenditure to the *Tsho-pas*, who assemble for the purpose. The *Kongdus* are exempted from land rent and all taxes during the term they hold office, and they also receive a present from each village at the ceremony of taking charge of their office, but receive no other remuneration.

The *Kongdus* also decide all civil disputes and questions of family right such as the share of the property which a woman is entitled to if a divorce is granted on her application. They also try criminal offences other than thefts, grievous hurt, by which is implied loss of a limb, and murder, which have to be referred to the Tibetan officials at Phari. They also make regulations for the allotment of the grazing grounds among the different villages, the maintenance of the village forest reserve, and enforce the local customs generally. They have the power of inflicting fine or beating. Though they are of the people themselves, their orders are invariably respected. I had nearly a year's experience of the working of this system when I was in Chumbi, as all supplies

and local transport were obtained through the *Kongdus* of the upper and lower valley, and I was struck by the manner in which the villagers carried out their orders and supplied the portion of any requisition which they allotted to a particular village without disputing the allotment.

Each *Kongdu* has under him four officers known as *La-yoks*, who perform the duties of orderlies and messengers and carry the orders of the *Kongdu* to the *Tsho-pas*. He has one *La-yok* for each of the *Tshos* or divisions into which the villages are divided for the purpose of grazing rights. The *La-yoks* hold their land rent-free and are exempted from taxes, and also each receive a yearly sum of 9 *srangs* (Rs. 22-8) as salary.

The land rent is levied on the amount of land held, which is estimated from the amount of seed sown on it, and comes to about As. 15 per acre. For the purpose of the house tax there are eight classes which are each assessed at a different rate, varying from Rs. 5 for the highest to As. 2 for the lowest class. The class in which each household is placed is decided by the new *Kongdus* at the first meeting of the *Tsho-pas*, who assist them in making the assessment, and also report whether any land has changed hands from one family to another; for no one is allowed to part with his lands to an outsider. Thus a man of Upper Tromo may not even sell or mortgage land to a man of Lower Tromo. Nor is anyone allowed to part with the whole of his land, lest he should leave the country and so be lost to the house tax and to the liability to personal service.

In the case of the grazing grounds, a fixed sum of 5 *srangs* (Rs. 12-8) is allotted to each of the 19 grazing grounds into which the various ranges of hills in the different villages are divided. These are allotted by the *Kongdus* between the different villages of the four *Tshos* groups, and the amount of rent paid by each group therefore depends on the number of grazing grounds allotted to it. This and the distribution of the grazing rent to each village is decided by the *Kongdus* at the meeting of the *Tsho-pas*.

Another of the duties of the *Kongdus* is to regulate the cutting of the grass on the Lingma thang plain, which is the chief grass supply for the winter's hay. The plain is closed to grazing on a fixed day, the 5th day of the 5th month (June), and one of the *La-yoks* is stationed there to see that no one grazes cattle or mules upon it. Anyone doing so is liable to fine or beating under order of the *Kongdus*. On either the 6th or 7th of the 9th month (October), everybody assembles from all the villages and the *Kongdus* take their banner and encamp at the lower end of the plain. They then worship the *Yul-Lha*, and after the ceremony the *Kongdus* declare that the grass can be cut. Everyone then sets to work at once to cut the grass, and the cutting is completed in about a week. This furnishes the supply of hay for the winter.

As has been already mentioned, the Tibetan Government, when it wanted to create an organised administration in Lower Tromo,

took the Upper Tromo administration as its model, and the two Commissioners deputed (the *Ta-Lama* and the *Lhalu Shapa*) introduced it with certain modifications.

Although, therefore, the system, as it exists in Lower Tromo, is of no historical interest, it is interesting as shewing the alterations which were made from the original system of Upper Tromo, and also from the fact that the Tibetan Government gave the *Kongdus* a banner as their insignia of office, similar to that held in their own right by the Upper Tromo *Kongdus*. The Lower Tromo *Kongdus* have also, on their own account, adopted some of the ceremonies of the Upper Tromowas. except that in respect to the *Yak* sacrifice on the ceremony of their appointment.

The alterations which the Tibetan Commissioners made from the ancient system of Upper Tromo were: The number of *Kongdus* has been fixed at three instead of two, and they are appointed annually and hold their office for one year instead of for a term of three years. The elective system by which every village chose its own *Tsho-pas* from whom the *Kongdus* selected and who assist the *Kongdus* in their assessments, has also been altered. Eighteen *Tsho-pas* were appointed to represent the eleven villages of Lower Tromo, and from these the *Kongdus* are selected in rotation: the first three for the first year, the next three for the second, and so on, so that all the list is worked through in six years and the office then comes back to the first three again. Any *Tsho-pa* may, however, resign when the village which he represents elects the *Tsho-pa* to take his place on the roster, and similarly in the case of death. The *Tsho-pas* are so arranged on the list that each group of three represents three different villages; there can never be two *Kongdus* from the same village at the same time.

The three *Kongdus* on taking office elect one of themselves as *Thri-pa* or Chairman, and take over the banner from the outgoing *Kongdus*, and the *Thri-pa* keeps the banner in his house. They also take an oath before the banner to administer justice truly "even between their own son and their enemy."

Their duties are the same as those of Upper Tromo.

41. *Gentianacearum Species Asiaticas Novas descripsit* I. H. Burkill *sequentes.*

Inter Frigidas, *ex affinitate* G. ornatæ, *Wall., et præcipue* G. ternifoliæ, *Franch.*

Gentiana Arethusæ.—*Planta* fontinalis, cæspitosa, 10–16 cm. alta, omnino glabra, e medio ramorum floriferorum caulem unicum repentem producens. *Rami* floriferi subdecumbentes, hexaphylli, internodiis quam foliis longioribus: rami stoloniformes 6–10 cm. longi, bracteati, internodiis quam bracteis longioribus. *Folia* constanter 6-verticillata, inferiora ovato-elliptica acuta 3–4 mm. longa gradatim in superioribus linearibus 10–14 mm. longis 1·5 mm. latis transeuntia: verticillus supremus in calycis basi insidens. *Flores* solitarii, læte cœrulei. *Calycis* tubus 10–12 mm. longus, vinoso perfusus, anguste campanulatus margine intergro: dentes 6, lineari-lanceolati, 5–8 mm. longi, 2 mm. lati, acuti. *Corollæ* tubus tubuloso-infundibuliformis, 4–5 cm. longus, ad os 15–18 mm. diametro: plicæ magnæ: lobi 6, deltoidei, caudati 5 mm. longi: plicarum lobi ad auriculas sinuatas tot quot petala reducti. *Stamina* intra fauces delitescentia, 28–32 mm. longa, ad corollæ tubi tertiam partem adnata. *Ovarium* stipitatum, stipite 18–20 mm. incluso 30 mm. longum: stylus 1·5 mm. longus: stigmata ·5 mm. longa.

China occidentalis.—In provinciæ Szechuen districtu Tchenkeou-tin, *Farges*, 253.

Typus in Herbario Horti Botanici Parisiensis conservatus est.

Inter Frigidas, *ex affinitate* G. cephalanthæ, *Franch.* *et* G. crassæ, *Kurz.*

Gentiana Atkinsonii.—*Planta* subcæspitosa. *Caules* decumbentes, plurimi, teretiusculi, castanei, ad 25 cm. longi. *Folia* basalia subrosulata, lineari-lanceolata, apice rotundata, basi acuta glabra, maxima ad 10 cm. longa ad 8 mm. lata: folia caulina basalibus similia, pleraque 6 cm. longa 6–8 mm. lata, tubuloso-vaginata, vagina 6 mm. longa: petiolus 5–0 mm. longus. *Flores* 3–6 ad apices ramorum, quisque inter bracteas duas vaginantes subsessilis. *Calycis* tubus tubuloso-campanulatus, quinque-angulatus, 8–9 mm. longus: dentes inæquales, lanceolati, margin-ibus scabridi, parum carinati, acutiusculi, 4–7 mm. longi. *Corollæ* tubus 20–22 mm. longus, tubuloso-campanulatus: plicæ magnæ: dentes ovato-deltoidei, 4 mm. longi, 3 mm. lati: plicarum lobuli inæquilaterales, serrulati, 1 mm. longi. *Stamina* fauces æquantia, paullo infra corollæ tubi medium inserta. *Ovarium* 12 mm. ongum: stylus brevis. *Semina* reticulata.

CHINA ORIENTALIS.—In provinciæ Kwang-tung montibus Lofan dictis ad alt. 3000 ped., *J. M. Atkinson*, 322.

Floret mense Septembris. Typus in Herbario Horti Botanici Regalis Kewensis conservatus est.

Inter Apteras, *ex affinitate* G. Walujewi, *Regel et Schmalh.* *et* G. decumbentis, *Linn.*

GENTIANA PHARICA.—*Planta* omnino glabra. *Caules* 1-3, subdecumbentes, 8–14 cm. longi. *Collis* fibrosus. *Folia* radicalia infundibulo-connata, 3–5-nervia, margine integra, apice acuta, basi subacuta, plurima 8–10 cm. longa et 14–22 mm. lata: folia caulina similia, at minora, ad 4 cm. longa. *Flores* 5–7, omnes in glomerulo terminali capitati vel duo inferiores paullo remoti ad apices ramorum pedicelliformium producti, viridi-straminei. *Calyx* dimidio-spathaceus, quinquedentatus, fissuræ marginibus scariosis, 13–18 mm. longus: dentes perparvi, virides, 1–2 mm. longi, subulati, basi in angulum acutum exhibentes. *Corollæ* tubus 17-20 cm. longus, 8–9 mm. diametro, tubuloso-campanulatus: plicæ conspicuæ: lobi 5, ovati, 4–5 mm. longi, 4–5 mm. lati: plicarum lobuli ovati, marginibus 1–2-dentati, 2 mm. longi. *Stamina* corollæ tubo breviora, 15 mm. longa, ad corollæ tubi dimidium adnata, filiformia. *Ovarium* angustum, nec stipitatum, 10–12 mm. longum: stylus 2 mm. longus.

ALPES HIMALAICAE ORIENTALES.—Ad fines thibetico-sikkimenses, prope Lonok, *Younghusband*, 195; Kangma etiamque in ripis rivuli Penamong Chu, *Dungboo*; prope Dotho, *Dungboo*.

Typi in herbariis Hortorum Botanicorum Regalium Kewensis et Calcuttensis conservati sunt. Species hæc *Gentianæ Walujewi*, Regel et Schmalh., proxima est.

GENTIANA WALTONII.—*Planta* omnino glabra, ad 2·5 cm. alta, caulibus 1 vel 2 erectis. *Collis* fibrosus. *Folia* radicalia linearilanceolata, infundibulo-connata, 3–5-nervia, nervis extimis dimidium versus evanescentibus, margine integra, basi et apice longe attenuata, plurima 10–15 cm. longa 1·5–2 cm. lata: folia caulina radicalibus similia at multo minora, ad 4 cm. longa. *Flores* fere sessiles, at inferiores in apice internodii pedicelliformis 1–3 cm. longi insidentes. *Calyx* dimidio-spathaceus, quinque-dentatus, fissuræ marginibus scariosus, 18–25 mm. longus: dentes inæquales, virides, 2–8 mm. longi, subovati. *Corollæ* tubus longe campanulatus, 3–5 cm. longus, 1 cm. diametro: plicæ conspicuæ: lobi 5, 7–10 mm. longi, lilacini: plicarum lobuli 3–4 mm. longi, ovato-deltoidei. *Stamina* corollæ tubo æquilonga: filamenta ad medium tubi affixa, filiformia. *Ovarium* stipitatum: stipite incluso 2–5 mm. longum: stylus 2–3 mm. longus: stigmata in ætate recurvata.

Thibet.—Sine loco indicato, *mercenarius Kingianus*, 277, 295, 1659; in valle rivuli Kyi-chu dicti, prope Lhasa, *Walton*, 1645; Lhasa, 12000 ped., *Waddell*; et ad Gyangtse, *Walton*, 1648.

Typi in herbariis Horti Botanici Regalis Kewensis et Horti Botanici Regalis Calcuttensis conservati sunt. Species hæc in mense Augusti floret; *Gentianæ decumbenti*, Linn., persimilis est.

Inter Apteras, *ex affinitate* G. kaufmannianæ, *Regel et Schmalh.*, *et* G. dahuricæ, *Fisch.*

Gentiana lhassica.—***Planta* omnino glabra, ad 8 cm. alta.** *Caules* 1–6, uniflores, subdecumbentes. *Collis* fibrosus. *Folia* radicalia linerari-lanceolata, infundibulo-connata, 3-nervia, margine integra, apice rotundato-obtusa, basin versus attenuata, plurima 7–9 cm. longa, 8–10 mm. lata: folia caulina anguste elliptica, longe vaginato-connata, apice obtusissima, 15–20 mm. longa, 6 **mm. lata.** *Flores* **solitarii, inter folia caulina suprema duo fere** sessiles. *Calyx* infundibulo-tubulosus, viridi-purpurascens: tubus 1 cm. longus: lobi subæquales, anguste ovati, sinubus rotundatis, 5 mm. longi. *Corollæ* tubus campanulatus, 15–18 mm. longus, 4–5 mm. diametro: plicæ magnæ: lobi 5, rotundato-ovati, 4 mm. longi, lilacini: plicarum lobuli ovati, acuti, 1 mm. longi. *Stamina* corollæ tubum æquantia: filamenta ad tubi medium adnata. *Ovarium* vix stipitatum, 1 cm. longum: stylus 2 mm. longus.

Thibet.—In valle rivuli Kyi-chu dicti, prope Lhasa, *Walton*, 1642.

Typi in herbario Kewense etiamque in Herbario Calcuttense conservati sunt. Floret mense Septembri.

Inter Apteras, *ex affinitate* G. macrophyllæ, *Pall.*, *et* G. tibeticæ, *King.*

Gentiana crassicaulis, *Duthie* in Herb. Kew.—*Planta* omnino glabra, 30 cm. alta et altior, caule singulo (an semper? an plerumque?), erecta. *Radices* 2–3 incrassati. *Collis* fibrosus. *Caules* fistulares. *Folia* radicalia petiolata, longe elliptico-ovata, vaginato-connata, 5-nervia, nervis inconspicuis sed in apicem ineuntibus, margine integra, basi acuta, apicem versus angustata, at apice acuta, minute mucronata, ad 14 cm. longa et 5 cm. lata: vagina 2–4 cm. longa: petiolus ad 4 cm. longus: foliorum caulinorum mediorum petioli vaginato-connati, vagina ampla: lamina e vaginæ margine expansa obovata, ad 10 cm. longa, apice obtusa: folia suprema quattuor involucram formantia, sessilia nec connata, mediis lamina similia. *Flores* 20–30, in capitulum aggregati, corollæ tubo viridi-albescentes livido maculati, lobis lividis. *Calyx* dimidiato-spathaceus, transparens, dentibus perparvis indistinctis, 6–7 mm. longus. *Corollæ* tubus 12–15 mm. longus, 4 mm. diametro:

plicæ conspicuæ: lobi ovati, obtusi, 4 mm. longi, 2–2·5 mm. lati: plicarum lobi 1 mm. longi, acuti. *Stamina* corollæ tubo æquilonga ad tubi mediam partem affixa. *Ovarium* stipite mellifluo incluso 8–9 mm. longum, elongatum: stylus 1 mm. longus.

China australis.—In provincia Yunnan, in pratis humidis regionis alpinæ montis Hee-gui-chao, alt. 9500 ped., *Delavay*, 1241: etiamque in provincia Szechuen, ad Tongolo, *Soulié*, 675; et ad Tachienlu, *Pratt*, 463. Vidi et enim specimina culta ex Horto Botanico Regali Kewense.

Typi in Herbario Kewensi conservati sunt. Maxime cum *Gentianam thibeticam*, King, congruunt: sed floribus minoribus conspicuissime differunt.

Inter Isomerias *ex affinitate* G. amœnæ, *C. B. Clarke, et præcipue* G. callistanthæ, *Gilg*.

Gentiana amplicrater.—*Planta* omnino glabra, nana, floribus magnis inclusis 5-6 cm. alta. *Collis* non fibrosus. *Folia* rosulata, ovata, 3-nervia, margine æqualia scariosa, apice obtusa, 2–3 cm. longa, 15–18 mm. lata, per paria infundibulum formantia, fere ad medium connata. *Flores* duo, subsessiles, alter vetustior, alter junior, lilacini. *Calyx* tubulosus, quinque-dentatus, viridis: tubus 2 cm. longus, ad os 12 mm. diametro: dentes inæquales, quadrato-ovati, scarioso-marginati, majores 10 mm. longi, 5–7 mm lati, minores 5 mm. longi 3 mm. lati, sinubus subquadratis. *Corollæ* tubus ventricosus, 4 cm. longus, 15 mm. diametro, amphoriformis: plicæ magnæ: lobi ovati-triangulares, 6–8 mm. longi, 6–8 mm. lati: plicarum lobuli ovati, 4 mm. longi. *Stamina* corollæ tubo breviora: filamenta ad partem dimidiam inferiorem affixa. *Capsula* staminibus æquilonga, angusta: stylus 3 mm. longus: stigmata parva.

Thibet.—Prope Lhasa ad fauces Pembu-la dictas, *Walton*, 1657.

Typi in herbariis Horti Botanici Regalis Kewensis etiamque Horti Botanici Regalis Calcuttensis conservati sunt. *Gentiana amplicrater* ad *G. depressum*, Wall., maxime accedit, differt floribus majoribus: ad *G. callistanthum*, Diels et Gilg, etiam accedit; foliis differt.

Inter Isomerias.

Gentiana amœna, C. B. Clarke, var., major.—*Flos* major: tubus ad 22 mm. longus, 10 mm. diametro.

Thibet.—sine loco designato, *mercenarius Kingianus*, 101, 1658; prope fines sikkimenses ad Khambajong, 19000 ped. alt., *Prain*, 1653.

Typi in herbariis regalibus Hortorum Botanicorum Kewensis et Calcuttensis conservati sunt.

Inter Chondrophyllas, *ex affinitate* G. pseudo-aquaticæ, *Kusnezow*, *et* G. humilis, *Stev.*

GENTIANA PSEUDO-HUMILIS.—***Planta*** nana, cæspitosa, caulibus subdecumbentibus ad 8 cm. longis, omnino glabra. *Folia* radicalia ovato-orbiculata, mucronata, ad 4 mm. longa margine cartilaginea: folia caulina obovata, recurva, margine scariosa, per paria 5–8 æquidistantia posita, 4–5 mm. longa, 3 mm. lata, vaginato-connata. *Flores* solitarii, pedicellati vel subsessiles, cœrulei. *Calycis* tubus decem-angulatus, ad angulas minopere cristatus, 5 mm. longus, 2 mm. diametro, margine æquali; dentes lanceolati, acuti, dorso minopere albo-cristati, albo-marginati, 2 mm. longi. *Corollæ* tubus 7 mm. longus: plicæ magnæ; lobi ovati, obtusi vel subacuti, 2–5 mm. longi: plicarum lobuli ovati dimidium loborum æquantes. *Stamina* fauces attingentia: filamenta supra corollæ tubi medium affixa. *Ovarium* stipitatum 3 mm. longum; stipes vix 2 mm. longus: stigmata antheras attingentia. *Capsula* longe exserta, longe stipitata, fere lenticularis, 5 mm. longa. *Gentiana intermedia*, Burkill MS. in Herb. Kew.

ALPES HIMALAICAE OCCIDENTALES ETIAMQUE SIBERIA.—In regione himalaica Garhwal, ad Gothing, 13000 ped., *Strachey et Winterbottom*, 15: in regionis Kulu valle Piti ad Nako et ad Changar *T. Thomson*: in regionis Chumba districtu Lahul, *Hay*: intra fines Kashmiricas, in districtu cis-indusino Rupshu, 15000-18000 ped. alt., *Stoliczka*; et Kargil ad fauces Namika, *T. Thomson*; etiamque prope vicum Kargil boream versus, *Stoliczka*; in valle fluminis Indus prope Leh, ad Hemis, *Heyde*; inter Leh et Lipshi, 12000-14000 ped. alt., *Stoliczka*; in valle transindusino fluminis Shayak prope Karsar, *T. Thomson*. In Afghanistania, *Griffith* 5823 K.D. In Siberia meridionale ad Irkutsk, *Vlassow*.

G. pseudo-humilis G. humili habitu persimilis; differt foliis recurvis.

Inter Chondrophyllas, *ex affinitate* G. purpuratæ, *Maxim.*, *et* G. recurvatæ, *C. B. Clarke.*

GENTIANA PANTHAICA.—***Planta*** omnino glabra, ad 10 cm. alta. *Caulis* herbaceus, ramos solitarios 2–5 gerens: rami caules fere æquantes, internodiis quam foliis longioribus. *Folia* basalia rosulata, ovata, ad 8 mm. longa, ad 5 mm. lata, acuta: folia caulina horizontalia at apice paullo deflexa, deltoideo-ovata, acuta vel acuminata, suprema per paria vaginato-connata. *Flores* conspicue pedicellati, iis Gentianæ recurvatæ majores, erecti vel nutantes. *Calycis* tubus 5 mm. longus, infundibularis, 3 mm. diametro, 5-angularis: dentes e basi semicirculari 1 mm. longa conspicue acuminati, acumine 3 mm. longo. *Corolla* post anthesin crescens: tubus 8 mm. longus, fauce 4–5 mm. diametro: plicæ magnæ: lobi ovati, 5 mm. longi, obtusi: lobuli plicarum ovati, eleganter fimbriati. *Stamina* fauce paullo excedentia: filamenta ad tubi mediam partem affixa. *Ovarium* stipitatum, 4 mm. longum; stipes

2-5 mm. longus: stylus 1 mm. longus. *Capsula* clavata, stipite 5 mm. longo incluso 7 mm. longa, apice obtusissima.—*Gentiana recurvata*, Forbes et Hemsley in Journ. Linn. Soc. Bot., xxvi, 1890, p. 133.

China australis.—In provincia Yunnan, in pratis ad collem Yen-tse-hay, *Delavay*.

Typi in herbariis Horti Botanici Regalis Kewensis Hortique Botanici Parisiensis conservati sunt. Species hæc quam *Gentiana recurvata* robustior est et floribus major.

Inter Chondrophyllas *ex affinitate* G. pedicellatæ, *Wall.*, *etiamque aliquomodo* G. apricæ, *Decne.*

Gentiana Listeri.—*Planta* nana, omnino glabra, 4–6 cm. alta, erecta, sæpe multicaulis, 3–12-flora. *Caulis* minutissime asper, internodiis quam foliis sæpe multo brevioribus. *Folia* radicalia rosulata, late ovata, apice mucronulata, 6–10 mm. longa, ad 7 mm. lata: folia caulina suberecta, per paria infundibulo-connata, ovata, cartilaginea, inferiora margine indurata, superiora margine albo-scariosa, apice mucronulata, hamata, internodiis æqualia vel longiora. *Flores* ? cærulei. *Calycis* tubus 5 mm. longus: dentes 3–3·5 mm. longi, subulati, lineares, vix carinati, erecti. *Corollæ* tubus 8 mm. longus, tubulosus; plicæ conspicuæ: lobi ovati, obtusi, 2·5–3 mm. longi; plicarum lobuli rotundati, fere integri. *Stamina* ad tubi medium affixa: filamenta lineari-subulata: antheræ fauces æquantes. *Ovarium* stipitatum; stylus nullus. *Capsula* matura sublenticularis ad fauces corollæ protrusa, fere 4 mm. longa, et 3 mm. lata. *Semina* elongato-trigona, lævia, 5 mm. longa.

Alpes himalaicæ orientales.—In districtu Darjeeling, in monte Tonglu, *Lister*, *King*; et ad oppidum Darjeeling, 6000 ped. alt., *Anderson*: intra fines sikkimensis ad Yakla, 10000 ped. alt., *C. B. Clarke*, 27831.

Inter Chondrophyllas, *ex affinitate* G. ripariæ, *Karel. et Kiril.*

Gentiana albicalyx.—*Planta* annua, nana, omnino glabra, 10–11 mm. alta, multiflora. *Folia* orbiculato-spathulata, conspicuissime albo-marginata, 4–5 mm. longa, 4–5 mm. lata, margine albo 0·5 mm. lato. *Flores* densissime aggregati, purpureo-lividi. *Calyx* tubulosus, quinque-dentatus: tubus scariosus, 2 mm. longus, 1 mm. diametro: dentes orbiculares, albo-marginati, dorso albo-cristati, 1 mm. longi. *Corollæ* tubus 3 mm. longus, 1·5 mm. diametro, infundibuliformis: plicæ sat conspicuæ: limbus expansus 7 mm. diametro: lobi viridi-lilacini, ovati, fere 2 mm. longi, 1·5 mm. lati: plicarum lobuli inæqualiter bifidi, brevissimi. *Stamina* fauces æquantia: filamenta ad superiorem partem tubi affixa. *Ovarium* stipitatum; stylus brevis, vix 1 mm. longus. *Capsula* ovoideo-lenticularis, 2 mm. longa.

THIBET ET ALPES HIMALAICAE.—In valle rivuli Jhangkar et ad fauces Jhangkar-la dictas, *Walsh*; necnon in valle Chumbi 8000–9000 ped. alt., *Searight.*

Floret mense Maio. Typi in Herbario Horti Botanici Regalis Calcuttensis conservati sunt.

Inter Chondrophyllas, *ex affinitate* G. Haynaldi, *Kanitz* (*G. Rockhillii*, Hemsl.), et G. micantis, *C. B. Clarke.*

GENTIANA SORORCULA.—*Planta* annua, cæspitosa, omnino glabra, caulibus plurimis æqualibus erectis vel suberectis. *Folia* radicalia rosulata, ovata, carinata, apice acuta, mucronata, basi obtusa, margine hyalina, 3-nervia, nervis extimis in margine delitescentibus: folia caulina densissima (internodiis tectis), late subulata, per paria connata, in parte inferiori late scariose marginata, 6–10 mm. longa, 1·5 mm. lata, superiora majora. *Flores* solitarii, in apicibus ramorum, ? lilacini. *Calyx* tubulosus, quinque-dentatus: tubus 6 mm. longus, 2·5 mm. diametro, dentes versus quinque-carinatus: dentes foliis caulinis similes, 6 mm. longi, sinubus acutissimis. *Corollæ* tubus 13–14 mm. longus, 2–2·5 mm. diametro, infundibuliformis: plicæ sat conspicuæ: lobi 4 mm. longi, anguste ovati, acuti; plicarum lobuli loborum dimidio æquales, bifidi. *Stamina* 11–13 mm. longa: filamenta ad tubi dimidiam partem affixa. *Capsula* elongata, stipite incluso 7 mm. longa.

THIBET.—Nec locus nec collector indicati, 307 partim.

Typus in herbario Horti Botanici Regalis Kewensis conservatus est.

GENTIANA MICANTIFORMIS.—*Planta* annua, cæspitosa, omnino glabra, caulibus plurimis inæqualibus, suberectis vel fere decumbentibus. *Folia* radicalia rosulata, late ovata, apice acuta hamata, margine indurata hyalina, 4–6 mm. longa, 3–4 mm. lata, 3-nervia: folia caulina subulata, per paria breviter vaginato-connata, internodiis paullo longiora, margine hyalina, 4–5 mm. longa. *Flores* solitarii in apicibus ramorum, cœrulei. *Calyx* tubulosus, quinque-dentatus: tubus 4–7 mm. longus, 2 mm. diametro, quinque-lineatus: dentes lanceolati, 3 mm. longi, acutissimi, indistincte carinati. *Corollæ* tubus 8–9 mm. longus, 2 mm. diametro: plicæ sat conspicuæ: lobi 5, ovati, 2·5–3 mm. longi, 1·5 mm. lati, subclausi: plicarum lobuli bifidi, dentibus inæqualibus, 1 mm. longi. *Stamina* fauces subæquantia: filamenta ad tubi dimidiam partem affixa. *Ovarium* stipitatum, elongato-ovoideum, corollæ fauces attingens. *Capsula* matura conspicue exserta, stipite 10–12 mm. longo. *Semina* elongato-ovoidea, longitudinaliter striata, punctata nec reticulata, vix ·2 mm. longa.

ALPES HIMALAICÆ ORIENTALES.—Ultra fines sikkimensi-thibetanos in valle prope urbem Chumbi, *Walsh*, 16, 60; in regione Phari dicta ejusdem vallis, *Dungboo*, 4586 partim; in colli supra

hospitium Tangu intra fines Sikkimenses ad 13200 ped. alt., *Younghusband.*

Species vernalis, maxime ad *Gentianam micantem*, spectat. Typi in herbariis Horti Botanici Regalis Kewensis et Horti Botanici Regalis Calcuttensis conservati sunt.

Inter Chondrophyllas, *ex affinitate* G. squarrosæ, *Ledeb.*

GENTIANA BRYOIDES.—*Planta* annua, omnino glabra, caulibus 1–6 subdecumbentibus. *Folia* radicalia rosulata, late ovata, apice acuta subhamata, basi obtusa, carinata, margine indurata hyalina, 5–7 mm. longa, 3–4 mm. lata, 3-nervia: folia caulina anguste oblanceolata, per paria vaginato-connata, aliquomodo efflexa, apice acutissima, internodiis breviora vel rarissime aequilonga, 3–4 mm. longa, 1–1·5 mm. lata. *Flores* solitarii in apicibus ramorum, cœrulei. *Calyx* tubulosus, quinque-dentatus: tubus 3 mm. longus, 1·5 mm. diametro, nec carinatus: dentes efflexi, ovati, acuti, subcarinati, 1 mm. longi. *Corollæ* tubus 5–6 mm. longus, 2 mm. diametro: plicæ sat conspicuæ: lobi ovati, 2 mm. longi, 1·5 mm. lati, subclausi: plicarum lobuli vix dimidiam partem loborum æquantes, margine laciniati. *Stamina* vix fauces attingentes: filamenta ad tubi dimidiam partem affixa. *Ovarium* ovoideum, stipitatum. *Capsula* matura lenticularis, longissime exserta, stipite 15–18 mm. longo. *Semina* ovoidea, angulata.

ALPES HIMALAICÆ ORIENTALES.—Prope fines thibetico-sikkimenses supra hospitium Tangu dictum, ad 14500 ped. alt., *Younghusband*, 1635.

Inter *Gentianam squarrosam*, Ledeb., et *Gentianam pseudo-aquaticam*, Kusnezow, et *Gentianam crassuloidem*, Bur. et Franch., mediam tenens. Typi in herbariis Horti Botanici Regalis Kewensis et Horti Botanici Regalis Calcuttensis conservati sunt.

GENTIANA YOKUSAI.—*Planta* erecto-patens, 2–14 cm. alta, subscabrida. *Caulis* erectus, 0–4 ramos basales gerens, etiamque 3–8 ramos solitarios caulinos iterum ramiferos. *Folia* basalia rosulata, ovata, uninervia, in anthesin persistentia, subacuta, ad 22 mm. longa, 8 mm. lata: folia caulina similia at minora, ad 12 mm. longa, 6 mm. lata, acuta, mucronulata, patentia. *Flores* solitarii, in apicibus ramorum pedicellati, cœrulei vel albi. *Calycis* tubus 5 mm. longus, quinque-cristatus, 2·5 mm. diametro, cristis parvis: dentes lanceolati, cristati, acuti, 2·5–3 mm. longi, *Corollæ* tubus 8 mm. longus, 3 mm. diametro: plicæ sat conspicuæ: lobi late ovati, obtusiusculi, 2 mm. longi: plicarum lobuli ovati, 2 mm. longi, dentibus perparvis 1–2 instructi. *Stamina* corollæ tubum excedentia: filamenta ad tubi mediam partem affixa. Ovarium stipitatum, 3–4 mm. longum: stipes 2 mm. longus: stylus 1 mm. longus. *Capsula* nunc inclusa nunc exserta, ovoidea vel ovoideo-lenticularis, ad 6 mm. longa: semina elongata, striata nec

punctata.—*G. squarrosa*, Forbes et Hemsley in Journ. Linn. Soc. Bot. xxvi, 1890, p. 135, pro parte.

China media.—In provincia Kwang-tung, sine loco indicato, *Wenyon*: in provincia Kiangsu ad oppidum Shanghai, *Maingay*, 424: in provincia Kiangsi ad Kewkiang, *Shearer*: in provincia Hupeh, sine loco indicato, *Henry*, 7377; ad Ichang, *Henry*, 506; ad Chienshi, *Wilson*, 561: in provincia Szechuen, sine loco indicato, *Henry*, 8858; ad Liu-hua-tsao, Chung-ching, *Bourne*; ad oppidum Tachienlu, *Pratt*, 388; in ripis fluminium Yang-tze-kiang et Min, *Faber*, 295.

Var. japonica.—*Folia* basalia erectiuscula, exacte lanceolata vel ovato-lanceolata, subacuminata.—*Gentiana pedicellata*, Yokusai, Somoku Dusets, iv, 64.

Japonia et Corea.—In insula Japonica Nippon, boream versus, *Hoggs*; in districtu Idzu, ad Shuzenzi, ex herb. Sc. Coll. Imp. Univ., Tokio; in districtu Kutsuke, ad Asamayama, *Bisset*; in districtu Musashi prope oppidum Yokohama, *Dickins*: ad Achisihama, *Bisset*, 855; in montibus centralibus, *Maries*: regionis Coreæ ad urbem Chemulpo, *Carles*; et in parte occidentali regionis, *Wykeham Perry*.

Inter Chondrophyllas *ex affinitate* G. crassuloidis, *Burvau et Franch.*, *et* G. myriocladæ, *Franch.*, *et* G. recurvatæ, *C. B. Clarke*.

Gentiana Prainii.—*Planta* diffusa, pluricaulis, pluriflora, ad 8 cm. alta, omnino glabra. *Caules* dichotome pauciramosa purpurei, internodiis quam foliis multo longioribus. *Folia* basalia subrosulata, sessilia, elliptico-ovata 1–3-nervia, apice obtusa vel rotundata, ad 7 mm. longa, ad 4 mm. lata: folia caulina similia, distantia, apice obtusiuscula, basi paullulo connata. *Flores* albi, solitarii, ante et post anthesin nutantes. *Calyx* quinque-sepalus; tubus 4 mm. longus, quinque-angulatus; dentes deltoideo-acuminati, 1 mm. longi. *Corollæ* tubus 6 mm. longus, fauce 2 mm. diametro; lobi ovati, obtusiusculi, 3 mm. longi, nigro-maculati: plicæ sat conspicuæ; lobuli plicarum inæquilaterales, 1·5 mm longi. *Stamina* in tubi parte inferiore inserta, parte libera 2·5 mm. longa. *Ovarium* stipitatum. *Capsula* clavato-lenticularis, exserta, 4–5 mm. longa. *Semina* elongata, lævia.

Alpes himalaicæ orientales.—In regionis Sikkim pascuis Pangling dictis, *Prainii mercenarius*, 20, 121; ad Gnatong, *Kingii mercenarius*; sine loco indicato, *Kingii mercenarius*, *Prainii mercenarius*, 306.

Ex affinitate *G. recurvatæ*, C. B. Clarke; præcipue differt habitu. Typi ad Shibpur conservati sunt.

Inter Chondrophyllas, *ad* Gentianam quadrifariam, *Blume, spectat.*

GENTIANA SAGINOIDES.—*Herba* annua, nana, cæspitosa, omnino glabra, caulibus plurimis subæqualibus erectis vel ascendentibus, 2–2·5 cm. alta. *Folia* radicalia rosulata, anguste ovata, carinata, margine hyalina indurata, apice subacuminata, basi obtusa, trinervia, nervis lateralibus sub apicem evanescentibus, 6–7 mm. longa, 2·5 mm. lata: folia caulina lanceolata, carinata, margine hyalina indurata, apice acutissime acuminata, 3–4 mm. longa, 1 mm. lata, internodiis longiora. *Flores* solitarii, terminales, ? cœrulei. *Calyx* tubulosus quinquedentatus; tubus 4 mm. longus, vix 1 mm. diametro, sub-carinatus: dentes foliis caulinis similes, 1·5 mm. longi, ·5 mm. lati, sinubus subacutis. *Corollæ* tubus 4 mm longus, tubulosus: plicæ sat conspicuæ: lobi 2 mm. longi, ovati, acuminati; plicarum lobuli loborum dimidio æquilongi, inæqualiter bifidi. *Stamina* fauces attingentia; filamenta ad tubi dimidiam partem affixa. *Capsula* sublenticularis, 3 mm. longa, longe stipitata, faucibus exserta.

ALPES HIMALAICAE OCCIDENTALES.—In districtu Kamaon ad Soonderdhunga, 10000 ped alt., *Anderson*.

Mense maio floret et fructificat. Habitu formæ alpinæ javanicæ Gentianæ quadrifariæ a cel. Koodersio descriptæ (Naturkundig Tijdschrift van Ned. Indie ix., 1906, p. 258) similis est. Typus in Herbario Horti Botanici Regalis Calcuttensis conservatus est.

Inter species sectionis Comastomatis *maxime* G. tenellæ, *Fries, affinis.*

GENTIANA DUTHIEI.—*Herba* nana, erecta, simplicicaulis, uniflora vel biflora, omnino glabra, 2–4 cm. alta. *Folia* radicalia 2 vel 4, spathulata, 2 mm. longa, vix 1 mm. lata, herbacea: folia caulina lanceolata, acuta, minutissime aspera, oculo nudo enervia, ad 4 mm. longa, ad 1–5 mm. lata, internodiis permulto breviora. *Flores* ? lilacini. *Calyx* brevissime infundibularis, quadrisepalus, minutissime asper: infundibulum 1 mm. longum, ecarinatum: lobi lanceolato-ovati, exacte acuti, 3 mm. longi, 1–5 mm. lati, basin versus angustati. *Corollæ* tubus 4 mm. longus, tubuliformis, nec plicatus, faucibus glaber; lobi 4, ovati, obtusi, 2 mm. longi. *Stamina* paullulo infra fauces inserta; filamenta brevia, 1–1·5 mm. longa; antheræ fauces attingentes. *Ovarium* elongato-ovoideum, 3–3·5 mm. longum: stylus perbrevis, vix distinguendus.

ALPES HIMALAICÆ OCCIDENTALES.—In regione Tehri-Garhwal ad viculum Chinpul, infra monte Bandarpunch 12000—13000 ped. alt., *Duthie*, 461.

Floret mense Augusto. Forsan *G. tenellæ* varietas est. Typi in Herbariis ad Shibpur et Saharanpur conservati sunt

Inter species sectionis Crossopetali.

GENTIANA DETONSA, Rottb., var. OVATO-DELTOIDEA.—*Folia* caulina ovato-deltoidea. *G. detonsa*, Rottb.; Forbes et Hemsley in Journ. Linn. Soc. Bot. xxvi, 1890, p. 127, pro parte.

CHINA MEDIA ET BOREALIS.—In provincia Hupeh occidentalis, *Wilson*, 2551; prope oppidum Hsingshan, *Henry*, 6522A; prope oppidum Paokang, *Henry*, 6522: in provincia Kansu orientem versus, *Potanin*.

Typi in Herbario Horti Regalis Botanici Kewensis conservati sunt.

GENTIANA DETONSA, Rottb., var. LUTEA.—An varietas, an species distincta? *Foliis* varietati *Stracheyi*, C. B. Clarke, similis; pedicello breviori etiamque floribus luteis differt.

CHINA AUSTRALIS.—In provincia Yunnan, ad oppidum Yunnanfu, *Ducloux*, 234.

Typus in Herbario Horti Botanici Kewensis conservatus est.

Inter Ophelias, *ex affinitate* S. purpurascentis, *Wall.*, *et præcipue* S. pubescentis, *Franch.*

SWERTIA CINCTA.—*Herba* 80–100 cm. alta, ramosa. *Caulis* stramineus, fistulosus, indistincte quadri-lineolata. *Folia* lanceolata, petiolata, acuta, basin versus attenuata: lamina ad 8 cm. longa, ad 10–12 mm. lata, ad anthesin infima delapsa: petiolus ad 10 mm. longus. *Flores* nutantes, pedicellati. *Calycis* hirsuti tubus 2 mm. longus: lobi anguste ovati, 9 mm. longi. *Corollæ* tubus perbrevis, 1 mm. longus: petala ovata, tenuissima, sepalis paullo longiora, 8–9 mm. longa, 5–6 mm. lata, uni-foveolata supra foveolam maculis tribus notata: foveola subrotunda, calva, ad fauces corollæ posita. *Stamina* 6–7 mm. longa: filamenta e basibus latis cyatham formantibus lanceolato-acuminata. *Ovarium* breviter stipitatum, stipite 1 mm. longo, elongato-ovoideum: stylus 1·5 mm. longus: stigmata brevia. *Semina* plurima. *Swertia purpurascens*, var., *violaceo-cincta*, Franchet in Bull. Soc. Bot. France, xlvi, 1899, p. 34.

CHINA AUSTRALIS.—In provincia Yunnan ad oppidum Yunnanfu, *Ducloux*, 318; ad Yuanchang, 7000 ped. alt., *Henry*, 13216: ad pedes monti Maeulchan, *Delavay*, 4269.

Typi in Herbariis Horti Botanici Parisiensis et Horti Botanici Regalis Kewensis conservati sunt.

Inter Ophelias, *maxime ad* S. Chiratam, *Ham.*, *spectat*.

SWERTIA TONGLUENSIS.—*Herba* habitu Swertiæ Chairatæ persimilis, ad 25 cm. alta vel forsan altior, omnino glabra. *Radix* brevis, oblique terram penetrans. *Caulis* singulus, erectus, in parte [superiori ramosus, rotundato-quadrangularis, anguste

quadri-angulatus, alis per paria approximatis. *Folia* infima in anthesin delapsa: folia media ovato-elliptica, vix connata, sessilia, ad 5 cm. longa, ad 2 cm. lata, apice obtusa, internodiis longiora, 5–7-nervia: folia superiora deltoideo-ovata, quinque-nervia, internodiis breviora: folia suprema fere lanceolata, parva. *Flores* tetrameri in paniculam racemiformem ter et iterum ramosam dispositi, vix conspicui, pedicellis 5–10 mm. longis filiformibus. *Sepala* oblanceolata, libera, ad 5 mm. longa, nec patentia. *Corollæ* tubus 1-1·5 mm. longus: petala sepala paullulo excedentia, 3–4 mm. longa, ovata, subacuta, bi-foveolata, ad medium lineolata: foveolæ approximatæ, ovatæ, marginibus basali excepto membrana longe fimbriata cinctæ. *Staminum* filamenta basin versus paullulo expansa, inter lobos corollæ ad os tubi annexa: antheræ versatiles. *Ovarium* ovoideum, 3 mm. longum: stylus brevis: stigmata antheras attingentia. *Capsula* matura plerumque nutans, distincte ex calyci exserta, aliquomodo rostrata, ad 8 mm. longa, purpureo-nigra. *Semina* aurantiaca, subglobosa, testa minutissime rugulosa.

Alpes himalaicæ orientales.—In regione Sikkimensi vel in districtu Darjeeling sine loco indicato, *Kurz*, *King*; in districtu Darjeeling ad fines nepalenses in cacumine montis Tonglu ad 10000 ped. alt., *T. Thomson*, *C B. Clarke*, *Burkill*; in declivitate montis Tonglu versus orientem ad 9000 ped. alt., *T. Thomson*.

Typi in Herbariis Hortorum Botanicorum Regalium ad Kew et ad Calcuttam conservati sunt. Floret tempore pluvio in mense Augusti vel Septembri. Flore et habitu *Swertiæ Chiratæ* Ham., similis est: capsulis longioribus et caulibus alatis differt.

Inter Ophelias *ex affinitate* S. puniceæ, *Hemsl.*, *et* S. longipedis *Franch.*

Swertia yunnanensis.—*Planta* erecta, ramosa, multiflora, ad 25 cm. alta, glabra. *Caulis* subquadrangularis, stramineus. *Folia* linearia, ad 25 mm. longa, 1–2 mm. lata, basi connata, subpetiolata, apice acuta, ima minima ad anthesin decidua. *Flores* pallide lilacini, sat conspicui, pedicellati pedicellis filiformibus. *Sepala* quinque, filiformia, ad 7 mm. longa, patentia. *Petala* 8–9 mm. longa, lanceolato-ovata, acuta, bi-foveolata: foveola quæque squama 3–4-dentata tecta. *Stamina* 3–4 mm. longa. *Ovarium* elongatum, staminibus paullo longius: stigmata in ovario sessilia.

China australis.—In provincia Yunnan ad oppidum Mengtze in montibus herbosis ad 6000 ped. alt., *Henry*, 9293A, *Hancock*, 7.

Floret mense Novembri. Typi in Herbario Horti Botanici Regalis Kewensis conservati sunt.

Swertia Hickinii.—*Planta* erecta, pauci-ramosa, ad 35 cm. alta, glabra. *Caulis* quadrangularis, purpurascens. *Folia* lanceolata, subpetiolata, ad 20 mm. longa, ad 6 mm. lata, acuta, uninervia; infima minima, ad anthesin decidua. *Flores* ad 25, inter

Ophelias conspicua, pedicellati. *Sepala* quinque, lineari-lanceolata ad 6 mm. longa, 1–1·5 mm. lata. *Petala* lanceolata, acuta, 6–9 mm. longa, bifoveolata: foveolæ fere ad petalorum bases positæ, unguiculiformes, pilis 1-2·5 mm. longis marginatæ præcipue ad marginem superiorem. *Stamina* 6 mm. longa. *Ovarium* ovoideum, staminibus æquilongum: stigmata sessilia.

China media.—In provincia Chekiang, *Hickin*.

Typus in herbario Horti Botanici Regalis Kewensis conservatus est.

Inter Ophelias *distinctissima.*

Swertia hispidicalyx.—*Planta* annua, hispida præcipue in sepalis. *Caules* subquadrangulares, 5–15 cm. alta, sat foliosa. *Folia* anguste ovata vel lanceolata, subamplexicaulia, sæpe marginibus revoluta, 10 15 mm. longa, 2–4 mm. lata, rara ad 20 mm. longa et 8 mm. lata, uninervia, marginibus in angulas caulis decurrentibus, apice acutissima. *Flores* in apicibus internodiorum ad 5 cm. longorum producti, pallide lilacini. *Sepala* libera, ovata, acuta, hispida, 4-7 mm. longa, 2–4 mm. lata. *Corollæ* tubus perbrevis: lobi ovati, acuti, biglandulosi, 6–8 mm. longi, 4–5 mm. lati, basin versus pili pauci gerentes. *Stamina* æqualia: filamenta ad fauces inserta 5–6 mm. longa: antheræ versatiles, everta. *Ovarium* angustum: stylus longus: stigmata antheras paullo superantia.

Thibet.—Sine loco indicato, *mercenarius Kinqianus*, 311, 369, 1633; urbis Lhasa boream versus in faucibus Phembu-la dictis, *Walton*, 1608; et orientem versus in valle fluminis Kyi-chu, *Walton*, 1159.

Var. major.—*Planta* ad 18 cm. alta, glabrior. *Flores* forsan albi. *Ovarium* ovoideum.

Thibet.—Ad castrum Gyang-tse, *Walton*, 1609.

Var. minima.—*Planta* diffusa, glabra, 4–6 cm. alta. *Stylus* subnullus.

Thibet.—Prope fines sikkimenses ad castrum Khamba-jong dictum, *Younghusband*, 293.

Inter Ophelias, *ex affinitate* S. angustifoliæ, *Ham.*,
et S. corymbosæ, *Wight.*

Swertia exacoides.—*Herba* robusta, erecta, pluriflora, ut videtur ad 15 cm. alta, glabra. *Caulis* 3–4 mm. diametro, quadrangularis, viridis, angulis minopere alatis. *Folia* ovata, ad 5 cm. longa, ad 25 mm. lata, basi libera sessilia, apice obtusa vel acutiuscula. *Flores* in paniculam latam laxam dispositi, testaceo mercenario rubri (ut crederem lilacini), sat conspicui, pedicellati, pedicellis fere filiformibus. *Sepala* quattuor, naviculari-lanceolata,

ad 6 mm. longa, patentia. *Petala* 7–9 mm. longa, ovata, subacuta, unifoveolata, supra minutissime puberula: foveola squama operculata, foveolæ margine superiori densissime brevissime tentaculato etiam squamæ margine tentaculato. *Stamina* 3–4 mm. longa. *Ovarium* staminibus paullo longius: stigmata in ovario sessilia. *Capsula* matura 10 mm. longa: semina permulta, fere sphærica, minutissime punctata.

Burma orientalis.—In montibus shanicis ad castrum Fort Stedman, *Abdul Huk*, *Kingii mercenarius*.

Typus in Herbario Horti Botanici Regalis Calcuttensis conservatus est. Floret mense Novembri. Maxime ad *S. angustifolium*, varietatem *pulchellam* accedit.

Swertia paupera.—*Herba* gracilis, erecta, nec ramosa, pauciflora, 10–15 cm. alta, glabra. *Caulis* tenuis, subquadrangularis, stramineus. *Folia* ima anguste elliptica: alia linearia ad 2 cm. longa, internodiis dimidio breviora, 1 mm. lata, basi libera sessilia, apice acuta. *Flores* 4–12, laxe cymosim dispositi, albidi, sat conspicui, pedicellati, pedicellis filiformibus. *Sepala* quattuor, naviculari-lanceolata, ad 4 mm. longa, patentia. *Petala* 7–8 mm. longa, ovata, subacuta, unifoveolata: foveola squama operculata, margine superiori et squamæ margine inconspicue minutie tentaculatis. *Stamina* 3–4 mm. longa. *Ovarium* elongatum, staminibus æquilongum vel paullo longius: stigmata in ovario sessilia.

Burma.—In districtu Mandalay versus Maymyo in terris pinguibus montium shanicorum, *Badal Khan*, *Kingii mercenarius*, 281.

Typus in Herbario Horti Botanici Regalis Calcuttensis conservatus est. Floret mense Novembri. Ad *Swertiam angustifolium*, var., *pulchellam* accedit: distinguitur jam prima scrutatione habitu et foliis.

Inter Pleurogynes *distincta.*

Swertia sikkimensis.—*Planta* subcaespitosa, ad 12 cm. alta, omnino glabra, multiflora. *Rami* straminei, apicem versus subquadrangulares, quisquis sex pares foliorum gerens. *Folia* anguste lanceolata vel fere linearia, sicco marginibus recurvis, acuta, sessilia, internodiis æqualia vel paullo longiora vel paullo breviora, ad 2 cm. longa, ad 5 mm. lata, at enim pleraque 2–3 mm. lata, uninervia. *Flores* pallide cœrulei inter Pleurogynes mediam tenentes, pedicellati: pedicelli filiformes. *Calycis* tubus 1 mm. longus: lobi lineares, 7 mm. longi, acutissimi, uninervia. *Corolla* 10–12 mm. longa in alabastro et post anthesin anguste voluta: lobi ovati, acuti, bicolores. *Stamina* 4–5 mm. longa, ad corollæ tubi basin inserta. *Ovarium* staminibus aequilongum: stigmata in tertia parte suprema decurrentia *Capsula* matura petalis, æquilonga.—*Pleurogyne sikkimensis*, Burkill in Herb. Kew.

Alpes himalaicæ.—Regionis Sikkim in monte Kinchinjhow,

ad 16000 ped. alt., *Hooker*, etiamque ad 17000 ped. alt., *Gammie*; ad Tangu in valle fluminis Lachen, *Hooker*, *Prain*; ad Yeumtong in valle fluminis Lachung, *Hooker*; ad Samdong vieulum (nescio quem) in Sikkim superiore, *Hooker*; ad vieulum Giagong, *Prain*; ad Nyi prope Toku, *Kingii mercenarius*; ad Jongri 13500–15000 ped. alt., *T. Anderson*: prope fines districtus Darjeeling ad Phallut, *Kurz*. Regionis Bhutan ad vieulum Kungmet, *Dunglass*, 295. In regione Kunawar, *Vicary*.

Inter Pleurogynes, *ex affinitate* S. brachyantheræ, *Knoblauch*, *et* S Clarkei, *Knoblauch*.

Swertia chumbica.—*Planta* ad 10 cm. alta, omnino glabra, diffuse ramosa, ramis plerisque solitariis nec per paria productis *Caules* rigidi, tenuissimi. *Folia* obovata, petiolata vel subsessilia, 5–8 mm. longa, 3 mm. lata, uninervia. *Flores* solitarii, ad apices internodiorum 2–5 cm. longorum producti. *Calyx* quinque-sectus, 3–3·5 mm. longus: sepala obovato-spathulata. *Corollæ* cæruleæ tubus perbrevis, 1 mm. longus; lobi lanceolato-ovati, 5 mm. longi, 3 mm. lati, modo S. carinthiacæ bicolores. *Stamina* ad basin petalorum affixa: filamenta 2 mm. longa: antheræ versatiles. *Ovarium* sessile, elongato-ovoideum, filamentis æquilongum: stigmata ad ovarii mediam partem decurrentia. *Pleurogyne chumbica*, Burkill in Herb. Kew.

Alpes himalaicæ orientales.—Ultra fines sikkimensi-thibetanos sine loco indicato, *mercenarius Kingianus*, 308 partim; in valle urbis Chumbi ad Tah-loom, *mercenarius Kingianus* 581. In regione Sikkim sine loco indicato, *Cave*, 2028, 4252; ad Hewlahangi, *Prainii mercenarius*, 200. In regione Nepal versus fines sikkimenses ad paludem Moza pokhri prope fauces Kangla. *Kingii mercenarius*.

Floret mense Augusti. Typi in herbariis Hortorum Botanicorum Regalium ad Kew et Calcuttam conservati sunt.

Inter Pleurogynes, *ex affinitate* S. carinthiacæ, *Griseb.*

Swertia lloydioides.—*Planta* ad 14 cm. alta, erecta, omnino glabra. *Caulis* e radice singulus, parum ramosus, castaneus, nitens. *Folia* oblanceolata, sessilia 8–10 mm longa, 3 mm. lata, uninervia. *Flores* solitarii, ad apices internodiorum longorum producti. *Calyx* quinque-sepalus: sepala lineari-lanceolata, 5 mm. longa, 1 mm. lata. *Corollæ* tubus perbrevis, 1 mm. longus: lobi 8–10 mm. longi, modo S. carinthiacæ bicolores. *Stamina* dimidio petalorum æquilonga. *Ovarium* staminibus multo longius, 8 mm. longum, sessile: stigmata fere ad basin decurrentia. *Capsula* matura petalis æquilonga. *Pleurogyne lloydioides*, Burkill in Herb. Kew.

Thibet.—Prope fines sikkimenses, ad castrum Khamba-jong. *Prain*, 1637.

Swertia carinthiaca, Griseb., var. afghanica.—*Planta* ad 10 cm. alta, multicaulis. *Flores* longissime pedicellati. *Swertia* sp., Griffith, Posthumous papers, ii., 1848. p. 306, no. 1050.

Afghanistania.—Ad pedes montis Hajiguk, 11400 ped. alt., *Griffith*, 1050.

Tres varietates habet *Pleurogyne carinthiaca*: una typica europæa sic crescit ut folia omnia subradicalia sint, caulibus erectis: secunda, var., *stelleriana*, Griseb., planta diffusa est, et folia ejusdem partim subradicalia partim caulina sunt: tertia var. *afghanica*, a varietati *stelleriana* distinguiter pedicellis longissimis. Varietas americana *pusilla*, A. Gray, nil nisi *stelleriana* forma est.

Swertia deltoidea.—*Planta* ad 25 cm. alta, erecta, ommino glabra. *Caulis* subquadrangularis, purpureo-castaneus, foliorum pares 6–10 gerens et enim ramos fere tot quot folia. *Folia* deltoideo-ovata, sessilia, basalia ad anthesin delapsa, media ad 15 mm. longa ad 10 mm. lata, acuta, mucronulata, nervis 3 inconspicuis, internodiis 3–4-plo breviora. *Flores* conspicui, numerosi, ad apices pedicellorum 1–1·5 cm. longorum positi. *Sepala* quinque, 8–10 mm. longa, lanceolata, acuta, fere apicem versus carinata. *Corolla* calyci duplo longior: tubus perbrevis: lobi ovati, acuti, fere acuminati, modo S. carinthiacæ bicolores. *Filamenta* 6–7 mm. longa. *Ovarium* antheras æquans: stigmata ad ovarii mediam partem descendentia. *Pleurogyne deltoidea*, Burkill in Herb. Kew.

China occidentalis et Mongolia.—In provincia Chinense Szechuen, inter oppida Tachienlu et Chentu, *Hosie*; et ad Tachienlu, *Farges*, *Mussot*. In Mongolia prope Urga, *Campbell*.

Inter Pleurogynes *distincta*.

Swertia gamosepala.—*Planta* diffuse ramosa, ad 14 cm. alta, omnino glabra. *Caulis* foliorum pares 4–6 gerens et ramos tot quot folia, purpureo-castaneus: rami erecto-patentes. *Folia* sæpissime obovata, 12 mm. longa, 5 mm lata, sessilia, apice obtusiuscula vel infima rotundata, uni-nervia, internodiis 3-8-plo breviora. *Flores* longe pedicellati, sat conspicui. *Calycis* tubus 2–3 mm. longus: lobi lanceolato-ovati vel ovati, obtusi vel apice rotundati, 3–4 mm. longi, uni-nervii nervis conspicuis. *Petala* calyci duplo longiora, ovata, acuta, bicolores: tubus perbrevis. *Stamina* 7–8 mm. longa. *Ovarium* 4–7 mm. longum: stylus 1–3 mm. longus: stigmata apicalia, nec decurrentia. *Pleurogyne gamosepala*, Burkill in Herb. Kew.

China occidentalis.—In provincia Szechuen, inter oppida Tachien-lu et Chentu, *Hosie*, etiamque ad Tongolo, *Soulié*, 682, et ad montes Tcha-to-Shan prope Tongolo, *Soulié*, 345.

Typi in Herbariis Horti Botanici Regalis Kewensis et Horti Botanici Parisiensis conservati sunt. Par videtur speciem hanc

Swertiam, sectionem Pleurogynen, nominare quod stigmatibus lateralibus exceptis characteres generis habet.

Inter Swertias distinctissima, et sectionem novam nomine Stapfianam *proposui.*

Swertia Stapfii.—*Planta* nana perennis, ad 6 cm. alta, omnino glabra. *Rhizoma* tenue, horizontale, scariosum, radicans, in caulem floriferam (flore singulo) ascendentem transeuns, et rhizoma novum ex axillo folii cujusquam inter inferiora gerens. *Caulis* floriferus obcure quadrangularis, internodiis plerisque foliis subæquilongis. *Folia* 8–10, late spathulata, per paria vix vel brevissime vaginato-connata, ad 12 mm. longa et 6 mm. lata. *Flores* conspicui, ante anthesin nutantes, aperti 3 cm. diametro. *Sepala* 5, crassiuscula, inæqualia, lanceolata vel lanceolato-ovata, apice rotundata, basi parum inter se conjuncta, 7–9 mm. longa, 2–3 mm. lata. *Corollæ* tubus 1–2 mm. longus. *Petala* obovata, apice rotundata, 18–20 mm. longa, 8–9 mm. lata, 7-nervia, bifoveolata, foveolis sub-basalibus membrana parva pectinato-fimbriata pileatis. *Stamina* ad tubi marginem inter lobos inserta: filamenta filiformia, 10–12 mm. longa: antheræ versatiles, 3 mm. longæ. *Ovarium* elongatum, 12–15 mm. longum: stigmata apicalia vix decurrentia. *Swertia n. sp.*, Stapf. MS. in Herb. Calc.

Thibet australis.—Sine loco indicato, *mercenarius Kingianus* 332, 334.

Inter Eu-swertias *distincta.*

Swertia Younghusbandii.—*Planta* erecta, unicaulis, 3–22 cm. alta, glabra. *Caulis* stramineus. *Folia* plurima radicalia, 2–4 caulina lanceolata, inferiora subsessilia vel petiolata, caulina sessilia, 1.5–3 cm. longa, 3–6 mm. lata, acuta. *Flores* in apicibus pedunculorum longorum producti. *Sepala* lineari-lanceolata, acutissima, 10–14 mm. longa, 1.5–3 mm. lata. *Corollæ* tubus luteæ perbrevis, 1 5 mm. longis: lobi 15–18 mm. longi, anguste ovati, ad marginem exteriorem viridi-lutei, infra bi-glanduliferi, longe fusco-barbati. *Stamina* ad corollæ tubi basin inserta: filamenta 8–10 mm longa: antheræ versatiles, lividæ. *Ovarium* elongato-ovoideum, 5 mm. longum: stylus nullus.

Thibet.—Ultra fines sikkimensi-thibetanos sine loco indicato *mercenarius Kingianus*, 1632; ad castrum Khambajong, ad 15000 ped. alt., *Prain* 1622, *Younghusband*, 297.

Inter Eu-swertias, *ex affinitate* Swertiæ marginatæ, *Schrenk.*

Swertia Souliæi.—*Planta* erecta, ad 12 cm. alta, glabra. *Collis* ob foliorum delapsorum basibus brunneus. *Caulis* singulus, stramineus. *Folia* quattuor basalia obovata, petiolata, recurva, apice obtusa, basin versus longe angustata, 3–5-nervia, ad 5 cm.

longa, ad 1 cm. lata: petiolus ad 1 cm. longus: folia caulina duo, paria, elongato-ovata, acuta, sessilia, ad 2 cm. longa, ad 8 mm. lata. *Flores*, 5–7, pedicellata: bracteæ imæ foliis caulinis similes at paullo minores. *Sepala* lanceolata, libera, acutissima, uni-nervia, ad 1 cm. longa *Petala* lanceolata, 12–14 mm. longa, acutiuscula, bi-foveolata: foveolæ pilis 3 mm. longis cinctæ. *Stamina* 6 mm. longa. *Ovarium* 4 mm. longum: stylus 1 mm. longus. *S. marginata*, Franchet in Bull. Soc. Bot. France xlvi, 1899, p. 312.

China occidentalis.—In provincia Szechuen ad oppidum Tachien-lu, *Soulié*, 614.

Typus in herbario Horti Botanici Parisiensis conservatus est.

Swertia subspeciosa.—*Planta* 12 cm. alta, glabra, erecta. *Caulis* singulus, apicem versus subquadrangularis. *Folia* subradicalia quattuor, elliptico-ovata, longa per paria vaginato-connata, petiolata, basin versus angustata, apice obtuse rotundata, 7-nervia: lamina 4–5 cm. longa, 15–18 mm. lata: petiolus 2–4 cm. longus. *Folia* caulina desunt. *Flores* ad 10, aggregati, bracteæ imæ magnæ, deltoideo-ovatæ, 1-nerviæ, 15 mm. longæ, 6 mm. latæ, acutiusculæ: pedicelli ad 1 cm. longi. *Sepala* anguste lanceolata, acuta. *Petala* obovata, 15 mm. longa, 6 mm. lata, obtusa, bi-foveolata; foveolæ marginatæ pilis in margine superiori brevibus in marginibus aliis longiusculis: series pilorum etiam brevium supra filamentorum insertiones videtur. *Stamina* ad petalorum bases inserta, 8 mm. longa. *Ovarium* ovoideum, 7 mm. longum: stigmata subsessilia.

China occidenlalis.—In provincia Szechuen inter oppida Batang et Tachien-lu, *Hosie*.

Typi in herbio Horti Botanici Regalis Kewensis conservati sunt.

Swertia speciosa, Wall., var. Lacei.—*Planta* erecta, multiflora, strictior, habitu S. punctatæ, Baumg., similis. *Folia* caulina inferiora internodiis longiora, lanceolato-ovata, acuta. *Flores* iis S. speciosæ typicæ paullo minores.

Alpes himalaicæ occidentales.—In regione Chamba ad fauces Sach dictos, 11000 ped. alt., *Lace*, 1221; in regione Kashmir ad Gulmarg, 8000–9000 ped. alt., *Duthie*, et ad fauces Lowari dictos, 9000 ped. alt., *Gutacre*, 17336; in districtus Hazara valle Khaghan ad 9000 ped. alt., *Inayat*, 19948.

Postscriptum.

Nuper mihi repatriato ad valetudinem recuperandam circa Gentianaceas præcipue Gentianinas asiaticas investigare occasio data fuit: atque apud Londinium, ubi mihi D. Prain benevolenter specimines multos thibeticos præbuit, iterum in herbario Kewense et in Museo Britannico laborare licuit. Ex Londinio ad Lutetias

Parisiorum transivi, et permultas plantas Chinenses aliasque inspexi. Postea in Indiam reditus collectiones amplas in hortis regalibus ad Shibpur, prope Calcuttam, et ad Saharanpur examinavi, et simulac collectionem Caroli A. Barber benigne commissam ex India meridionali.

Nunc ut mox dissertationem majorem de distributione geographica per terras asiaticas omnium Gentianinarum facilius proponere possim, discriptiones elaboratas novarum specierum præcedentes edidi.

Restat ut illis amicis (D. Prain, W. B. Hemsley, J. F. Duthie. S. le M. Moore, E. G. Baker, A. Finet, A. T. Gage, C. A. Barber, H. Martin Leake) qui mihi in hoc opere auxilio fuerunt, gratias justas et maximas agam.

42. *Swertiam novam japonicam ex affinitate* Swertiæ tetrapteræ, *Maxim., descripserunt* Spencer Le M. Moore et I. H. Burkill.

Swertia Bisseti. *Herba* verisimiter annua, ultra-spithamea, glabra. *Caulis* erectus, rariramosus, paucifoliatus, obtuse quadri-angulatus: ramuli ascendentes. *Folia* sessilia, oblongo-lanceolata, obtusa, basi levissime cordata, ut videtur tri-nervia, crassiuscula, omnia speciminis unici solummodo obvii opposita, modice 1–2 cm. longa et 5–6 mm. lata, in sicco olivacea subtus pallidiora. *Flores* (? lutei) tetrameri, in corymbis brevibus sublaxis plurifloris ramulos coronantibus digesti, humectati circa 8 mm. diametro: pedicelli gracillimi, quam flores sæpissime longiores, 5–10 mm. longi. *Calycis* lobi lanceolati, acuti, 4 mm. longi. *Corollæ* tubus 1 mm. longus: lobi oblanceolato-oblongi, obtusissimi, 6 mm. longi., medium paullulo infra uni-foveolati; foveola glandulosa ovata, supra distincte marginata, infra evanescens, circa ·75 mm. longa: *Filamenta* omnino filiformia, apicem versus levissime attenuata, 3 mm. longa: antheræ ovato-oblongæ, 1·2 mm. longæ, connectivo brevissime producto: loculi inter se paullulum inæquales. *Ovarium* oblanceolato-oblongum, 4 mm. longum: stylus nullus: stigmatis lobi lineares, ·5 mm. longi. Capsula ignota.

Japonia, in insula Yezo (V. E. Kinch ex J. Bisset). Typus in Herbario Musei Britannici conservatus est.

43. Anthropological Supplement.

1. *An old Reference to the Bhotias.*

Father Rodolfi Aquaviva, in a letter to the General of his Order, dated April 1582, states that he and his colleagues had discovered a new nation of Gentiles called Bottan, situated beyond Lahore and towards the river Indus. They were a nation very well inclined and given to good works. Moreover they were white men and there were no Mahommedans among them. It was to be hoped therefore that if the Fathers of an apostolic fervour were sent among them, there would be a great harvest of Gentiles. The Italian of this letter is to be found in Bartoli, p. 48, ed. Piacenza, 1819, and there is a translation by General Maclagan in his paper on Jesuit Missions, in our Journal for 1896, p. 55. General Maclagan apparently supposes that Bottan is the same as Pathan, and refers in a note to a description of a Cabul tribe by Father Monserrat in the Orienta Conquista. Apparently the passage he refers to is that which appears in the Bombay reprint of 1886 as Conquista I, Division II, of the second volume No. 63 and p. 104. He also remarks that in the books of the period there seems to be some confusion between Pathans and Bhutānis. But Bottan cannot be Pathan, for the people were Hindus and not Mahommedans. I submit, therefore, that the Bottanese of Aquaviva must be the Bhotias of Almora and British Garhwal described in a recent Memoir of our Society by Mr. Sherring. It is true that the locality as described by Aquaviva does not agree, but he may have easily been mistaken on this point. Possibly too by "beyond Lahore" he meant further from Italy, *i.e.*, to the north-east of Lahore, and by the Indus he may have meant one of its tributaries. If his Bottan is the same as Bhotia, his reference is interesting as perhaps the earliest European reference to the tribe. He may, however, simply have meant the Tibetans.

H. Beveridge.

—o—

2. *Note on a Quatrain of 'Umar-i-Khayyam.*

The following quatrain is chanted by dervishes in Persia at the gates of great people as a warning against pride. A musician informs me that in accordance with the usual Oriental practice, the singer modifies the air reproduced below, by means of an endless variety of "grace-notes," in a manner which it would be impossible to indicate on the written score without overloading the simple "motives" beyond recognition.

زاغی دیدم نشسته در بارهٔ طوس ∴ در پیش نهاده کلّهٔ کیکاؤس
با کلّه همی گفت که افسوس افسوس ∴ کو رستم و کیقباد کو کیکاؤس

I saw a raven seated on the walls of Ṭūs,
Before it lay the skull of Kaikâ'ūs;
To the skull it kept saying, "*Afsūs! Afsūs!*
Where is Rustam, where Kaiqubād, where Kaikā'ūs?"

In Whinfield's 'Umar-i-Khayyam, this quatrain (No. 277) reads:—

مرغی دیدم نشسته در بارهٔ طوس ∴ در پیش نهاده کلّهٔ کیکاؤس
باکلّه همی گفت که افسوس افسوس ∴ کو بانگ جرسها وکجانالهٔ کوس

"I saw a bird perched on the walls of Ṭūs,
Before him lay the skull of Kai Kawús,
And thús he made his moan, 'Alas, poor king!
Thy drums are hushed, thy 'larums have rung truce.'"

D. C. Phillott.

3. *A Persian Nonsense Rhyme.*

Persians delight in mimicry, and the following clever nonsense, impossible to translate satisfactorily, was composed by an *Ākhūnd*, a friend of the present writer, in ridicule of the sermons of certain learned divines. A Persian preacher, who has any claims to scholarship, first delivers a sentence in Arabic, and then translates it into Persian, mouthing the words and speaking with an exaggerated accent: more attention is paid to rhyme and alliteration than to sense:—

دیروز گذشته خدمت آقایان گرام عرض شد چنین است بچهٔ زاغ زاغ؛
کرّه خر آلاغ؛ قلی[1] ران اسپ وکیل الملک داشت داغ؛ جائی که سبزه زار

[1] I have failed to discover the meaning or allusion of *Quli-yi rān*.

است راغ ؛ در دست مَي خواران است ایاغ ؛ در خانهٔ همه کس است چراغ ؛ در صورت [1] انسان است دماغ ؛ در پای زنهاست دُلاغ [2] — اما این مسجد است نه کلیسا و این خانه خانهٔ خدا است نه معبد ترسا *

D. C. PHILLOTT.

—o—

4. *A Note on the Mercantile Sign Language of India.*

In the open-air markets of India, where idle spectators are by ancient custom entitled to increase the noise and confusion of bargaining, secrecy in dealing would be impossible were it not for some simple code of manual signs known to all Indian brokers and merchants. The signs are simple and distinctive, and mistakes are hardly possible. Suppose, for instance, it is a horse that is to be bargained for at a fair: the unit in this case would be a hundred rupees. The buyer and seller extend their right hands, over which one of them casts a concealing handkerchief or the end of his coat or *pagri*. The seller will, of course, at first indicate an exhorbitant figure; the buyer, one much lower than he intends to give. If the difference between the two sums is very great, it is usually an indication that the negotiations will terminate abruptly. Now, suppose that the buyer wishes to offer Rs. 266; he grasps the forefinger and the second finger of the seller's hand to express two units or two sums of a hundred rupees. He next doubles up the third finger to express half the unit, or rupees fifty: total Rs. 250. The value of the fingers now drops from Rs. 100 to Rs. 10: he, therefore, to add ten to the figure expressed, grasps the forefinger and makes the price Rs. 260. The second finger doubled up adds half, or Rs. 5, and makes the sum Rs. 265. The value of the fingers now drops from ten to one: he, therefore, grasps a forefinger and makes the price Rs. 261.

The bystanders, though in complete ignorance of the sums asked and refused, take an active part in the proceedings and champion the cause of the buyer—at least if the buyer be a *Sahib*. "*Ghar kā dushman*, enemy of your own house," they say to the seller, "why don't you sell?"

Mules are, in the Panjab, generally owned by Khatris; so when it is a mule that is being bargained for, the proceedings are prolonged and the excitement sometimes becomes excessive. The seller is thumped violently on the back, and pushed and shaken till he breaks away in a huff. He is then forcibly brought back, sulky and frowning, and made to extend his hand and continue the negotiations. When the bargain is concluded he breaks into smiles. Apparently everybody has been acting a part and thoroughly enjoying it.

---

[1] *Sūrat*, "face" (m.c.).

[2] *Dulāgh* T. "stockings."

The code described above is known to horse-dealers throughout the Panjab, and probably throughout India.

Amongst jewellers, cloth merchants, and perhaps other trades, there are variations in the code. Amongst them also, a single finger signifies a unit of one, ten, a hundred, or a thousand rupees. If the unit be one rupee, the words "*Yih rupiya hai*" are said as the finger or fingers are grasped: if the unit be ten, "*dahā,ī*"[1]; if a hundred, "*sau*": if a thousand, "*hazār.*" Half a unit is expressed by extending a forefinger along the palm of the other person's hand: thus to indicate Rs. 15 the dealer would first express Rs. 10 by grasping one forefinger and exclaiming "*dahā,ī,*" and then would either extend his forefinger along the other's palm to indicate half or Rs. 5, or else grasp all five fingers of the other's hand to express the same number. The lowest fraction is four annas, which is called *māsha.* To express Rs. 1-8 the dealer would grasp a forefinger saying, "*Yih rupiya hai,*" and then grasping the forefinger and second finger say, "*Yih māsha.*" Fractions of four annas each are also expressed by pressing between the forefinger and thumb the joints of the other bargainer's forefinger. Thus the first joint, when so pressed, indicates four annas, the second joint eight annas, and the base of the finger twelve annas.

How far has this or a similar code spread? Is it known in Central Asia, or indeed anywhere beyond Indian limits? It *may* be known in some of the parts of the Persian Gulf, but it is not known in the interior, neither to Arabs nor to Persians. Even the Arab horse-dealers who visit Bombay do not employ it.

D. C. Phillott.

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5. *The Meaning and Origin of the Phrase* "Nuri Muhammad" *among the Malays of the Patani States.*

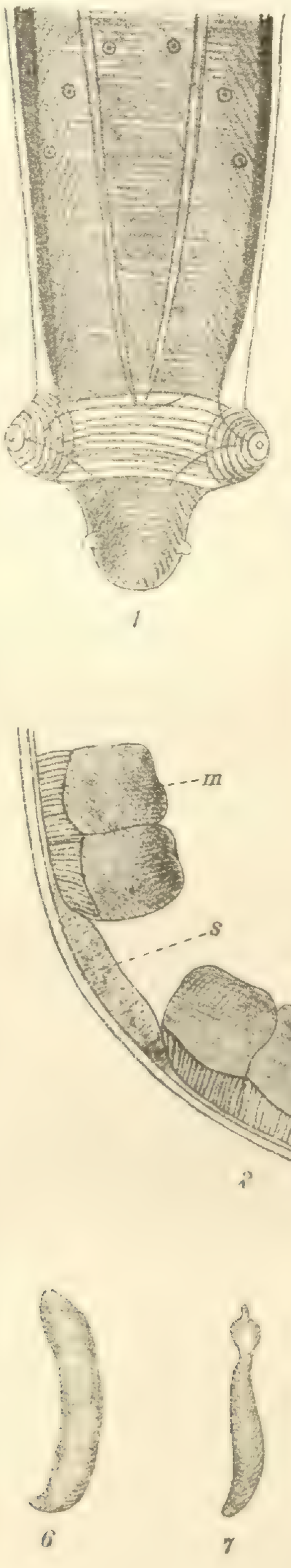
In my account of the religion of the people of the Patani States (Lower Siam) who call themselves indifferently "Malays" (*Orang Maláyu*) or Muhammadans (*Orang Islam*), I made no attempt to explain a phrase that I had heard among them, but merely gave its common use and ostensible meaning in Malay, this meaning being the one attached to it by the peasants of the district. The phrase was *Nuri Muhammad*, which appears to signify "Muhammad's parrot" or "parrots," the word *nuri* or *nóri* being a usual one and having given rise to the English "lory," though by no means confined to the section of the parrots so called by Europeans. (See *Fasciculi Malayenses*, Anthropology, II, p. 37.) As there is, properly speaking, no plural in Malay, and as the possessive follows any other case without inflection or particle, *Nuri Muhammad* appears at first sight to be straightforward Malay; but the conception which the phrase expresses

[1] Vulgarly corrupted into *ḍhā,ī* (2/½).

in Patani is so alien to primitive Malay thought—and the Patani folk are among the most primitive of the Malays—that a foreign origin would not be surprising To the Patani peasant his *Nuri Muhammad* is very much what his "conscience" is to an uneducated Christian, except perhaps that it is regarded from a slightly more concrete point of view. It is a being which was described to me as sitting in the heart of every Mussalman (one individual, that is to say, in the heart of each believer) and preventing him from becoming wicked, apparently by repeating the precepts of the Prophet as a parrot might do. It was further identified with the "White Jinns" or "Muhammadan Jinns" (*Jinn Puteh* or *Jinn Islam*), which in British Malaya are generally regarded as independent spirits. But as most of man's dealings with his powerful inferiors the spirits are, according to the Malays. of a somewhat doubtful morality. implying theft, injury to enemies or at any rate to the souls of animals. unlawful excitation to love, and the like; and as the White Jinns are incapable of sin, it follows that these particular spirits are of little account, seldom mentioned and probably seldom remembered except in remorse. The White Jinns are the only moral beings in the lesser mythology of the Patani, Malays. Allah and the Angels (see Skeat, *Malay Magic*, p. 98) are away in the heavens and trouble themselves little about mundane affairs, while man comes in contact at every turn with the minor ghosts, demons, imps and fairies which people the air, the earth and the waters and animate the whole of nature —dead (according to our ideas) or living.

I have long suspected, therefore, that "Muhammad's Parrots" might be of the kin of Allah and the Angels. and I would now suggest that *Nuri Muhammad*, like so many phrases in Malay, is Persian or Arabic mispronounced and misunderstood; in short, that it is a corruption of the well-known theological expression *Nur-i-Muhammad*. Hughes in his *Dictionary of Islam* explains this phrase (literally "the light of Muhammad") as meaning the spirit of Muhammad, which existed before the creation of the world. Elsewhere (*Notes on Muhammadanism*) the same author compares it with the "divine Word which was made flesh." Col. D. C. Phillott tells me that though this is the correct theological interpretation of the expression, it is frequently misunderstood by ignorant Mussalmans. some of whom explain it as the physical light which radiated from the countenance of the Prophet. *Nur*, meaning light in either a literal or a metaphorical sense, occurs in Malay writings (see Wilkinson's *Malay-English Dictionary*, *s.v.*), but I do not think that it enters the vocabulary of the Patani peasant. whom the Persian *i* would certainly puzzle.

N. Annandale.



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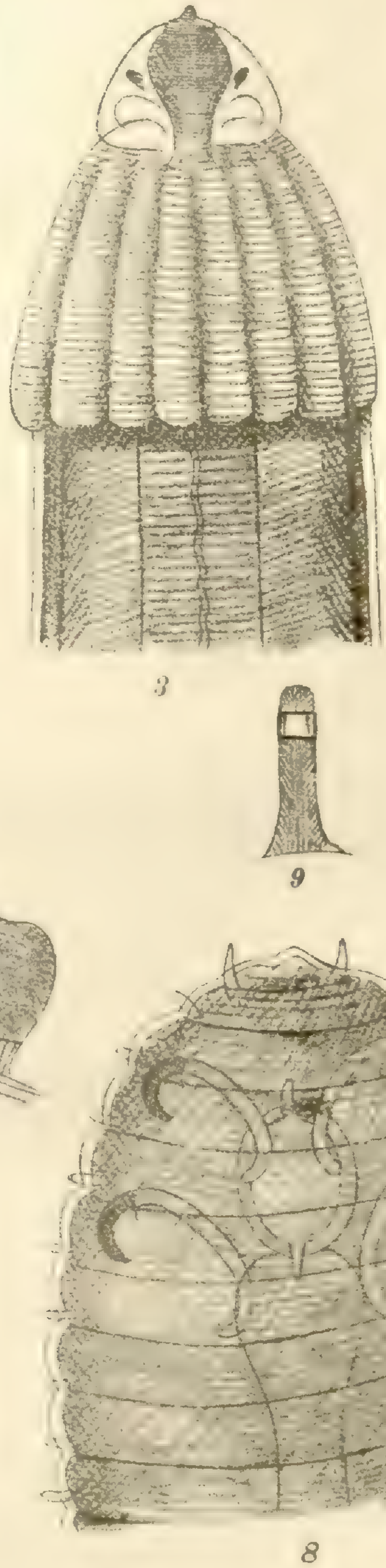

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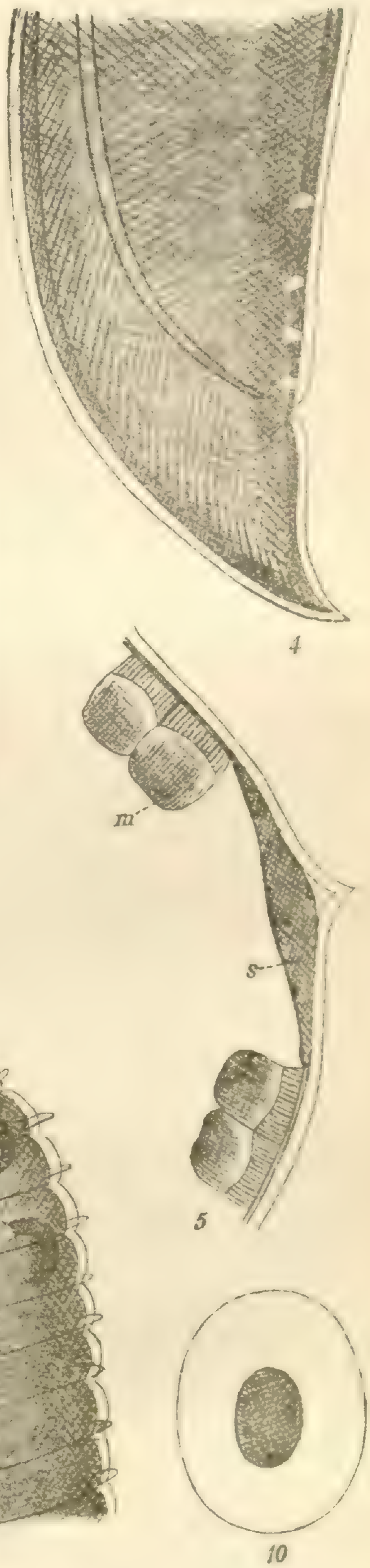

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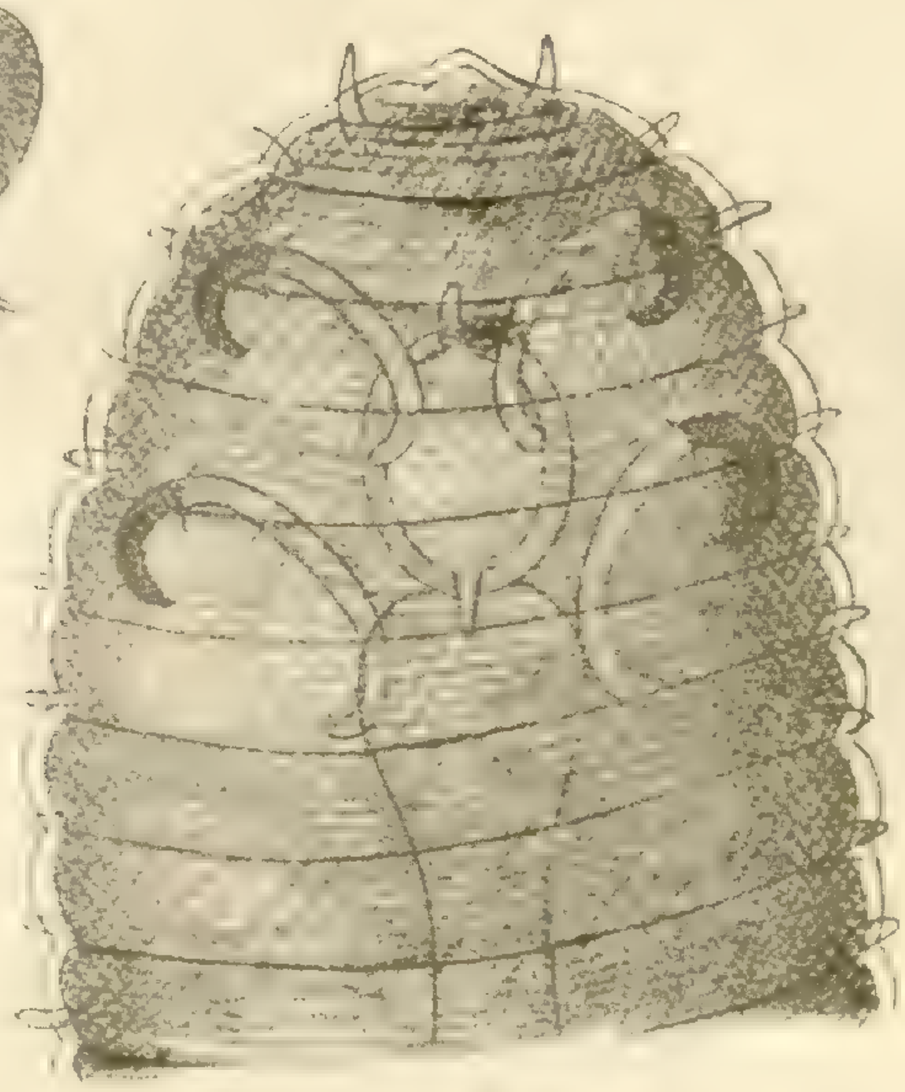

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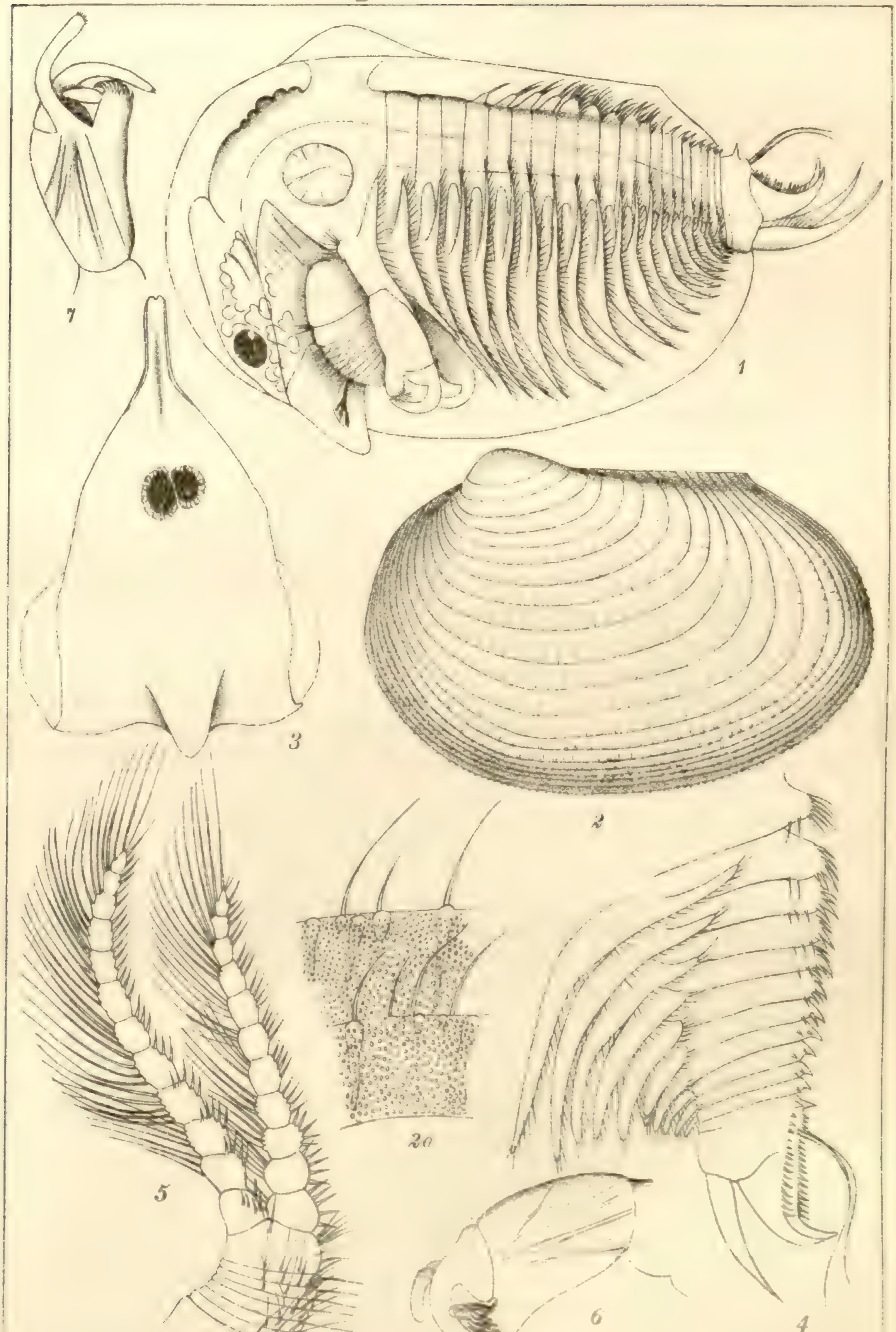

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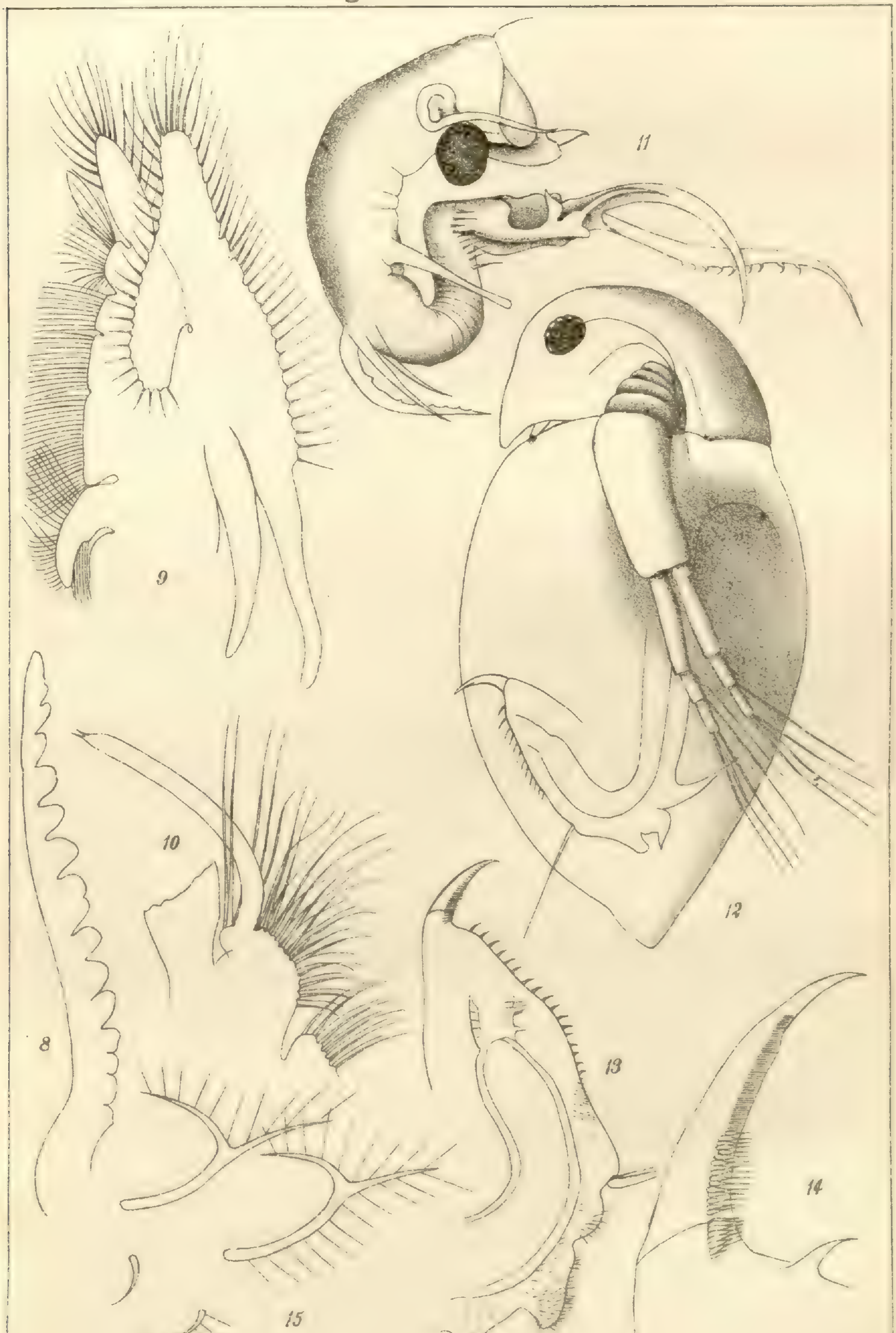

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PRINCIPAL PUBLICATIONS OF THE SOCIETY.

Asiatic Researches, Vols. I—XX and Index, 1788—1839.
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Memoirs, Vol. 1, *etc.*, 1905, *etc.*
Journal, Vols. 1—73, 1832—1904.
Journal and Proceedings [*N. S.*], Vol. 1, *etc.*, 1905, *etc.*
Centenary Review, 1784—1883.
Bibliotheca Indica, 1848, *etc.*

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JOURNAL & PROCEEDINGS

OF THE

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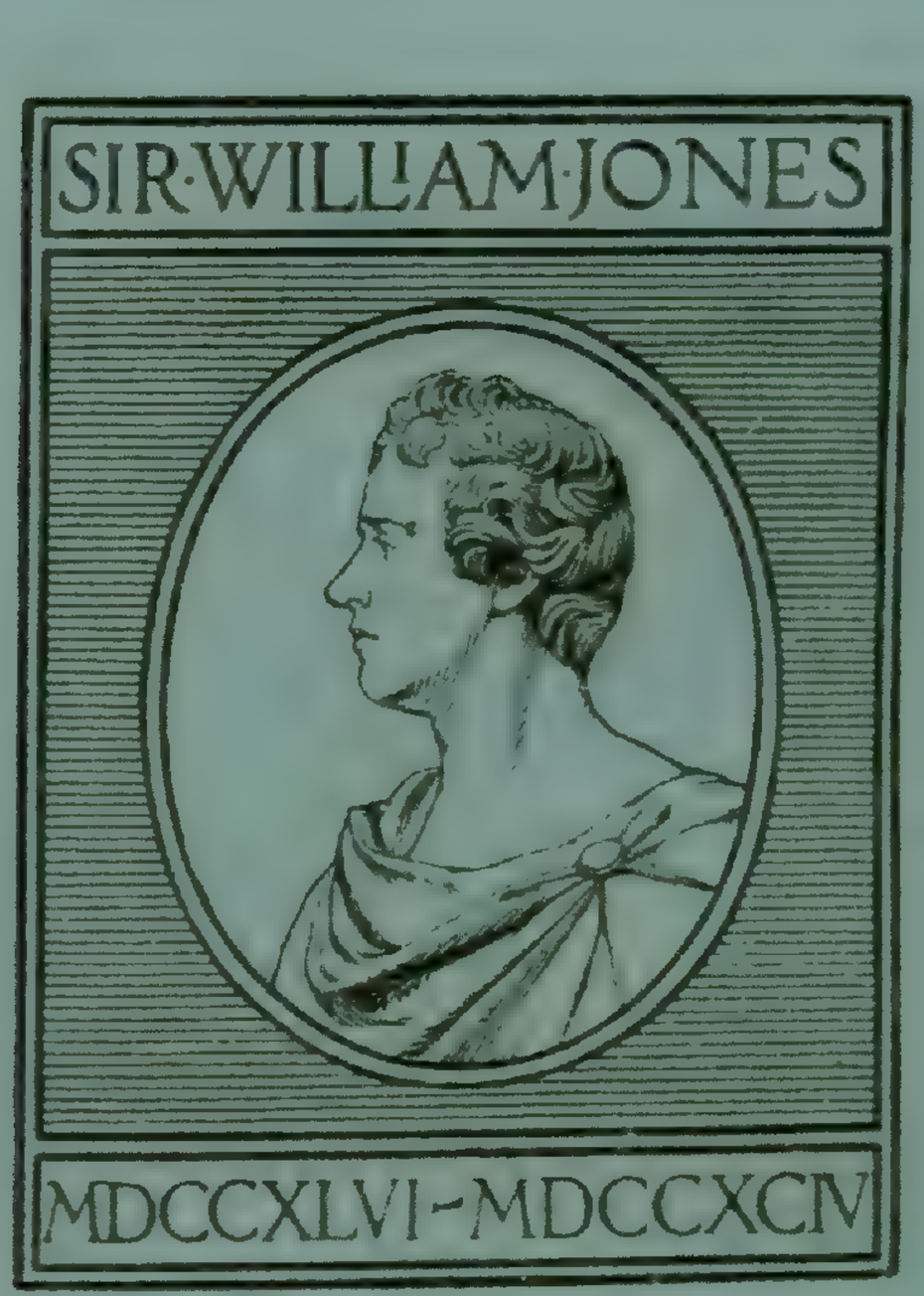
AUGUST, 1906.



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1906.

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AUGUST, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 1st August, 1906, at 9-15 P.M.

THE HON'BLE MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., Vice-President, in the chair.

The following members were present :—

Dr. A. S. Allan, Dr. N. Annandale, Babu Sasi Bhushan Bose, Mr. I. H. Burkill, Mr. B. L. Chaudhuri, Mr. L. L. Fermor, Capt. A. T. Gage, I.M.S., Babu Amulya Charan Ghosh Vidyabhushana, Mr. H. G. Graves, The Hon'ble Mr. K. G. Gupta, Dr. H. H. Mann, Major F. P. Maynard, I.M.S., Pandit Pandeya Umapati Datta Sharma, Lieut.-Colonel D. C. Phillott, Pandit Yogesa Chandra Sastri-Sankhyaratna-Vedatirtha, Mr. G H. Tipper, Mahamahopadhyaya Satis Chandra Vidyabhushana, Mr. E. Vredenburg, Rev. E. C. Woodley, Rev. A. W. Young.

Visitors :—Mr. H. Hughes, Mr. C. A. Paiva, Mr. W. D. R. Prentice, Mr. R. E. Whichello.

The minutes of the last meeting were read and confirmed.

Seventy-one presentations were announced.

The General Secretary announced that Col. F. B. Longe, R.E., and Mr. S. C. Hill have expressed a wish to withdraw from the Society.

The General Secretary also announced the death of Mr. M. H. Oung, and Mr. W. C. Bonnerjee (ordinary members) and Moulvie Abdul Hai (an Associate Member of the Society).

Lieut. Arthur C. Osburn, R.A.M.C., M.R.C.S., L.R.C.P. (Lond.), proposed by Lieut.-Col. D. C. Phillott, seconded by Mr. H. H. Hayden ; *Mr. C. Stanley Price*, Victoria Boys' School, Kurseong, proposed by Mr. J. A. Chapman, seconded by Mr. W. K. Dods ; *Captain G. B. Riddick*, R.A.M.C., proposed by Major L. Rogers, I.M.S., seconded by Captain J. W. Megaw, I.M.S. ; *Dr. William Willoughby Kennedy*, M.A. (Glasgow), M.D. (Lond.), M.R.C.S., L.R.C.P., D.P.H. (Camb.), proposed by Major L. Rogers, I.M.S., seconded by Dr. H. C. Garth ; *Dr. A. M. Leake*, Chief Medical Officer, Bengal Nagpur Railway, proposed by Lieut.-Col. G. F. A. Harris, I.M.S., seconded by Major L. Rogers, I.M.S., were ballotted for as ordinary members.

Dr. N. Annandale exhibited specimens of a barnacle (*Dichelaspis maindroni*, Gruvel) which is very common on the gills of crabs from the mouth of the Ganges. Specimens were found on

a considerable number of edible crabs (*Scylla serrata*) exposed for sale in Calcutta during July. It is probable that this barnacle is beneficial to its host, as the movements of its cirri must aid in the circulation of the water in the gill-cavity of the crabs and other Crustacea to which it attaches itself. Its presence certainly does not render the flesh of these Crustacea unfit for human consumption, as appears to have been thought by some persons in Calcutta.

The following papers were read :—

1. *Bibliomancy, Divination, Superstitions, amongst the Persians.—By* LIEUT.-COL. D. C. PHILLOTT.

2. *Gentiana Hugelii*, Griseb., *redescribed.—By* DR. OTTO STAPF. *Communicated by* I. H. BURKILL.

3. *On Swertia angustifolia*, Ham., *and its Allies.—By* I. H. BURKILL.

4. *Notes on Some Rare and Interesting Insects added to the Indian Museum Collection during the year* 1905-1906.—*By* C. A. PAIVA. *Communicated by* DR. N. ANNANDALE.

5. *Hágo and his Grandsons.* (A leaf from the history of ancient Kámarupa.)—*By* SATYARANJAN RAY. *Communicated by the Philological Secretary.*

6. *Bulbophyllum Burkilli, a hitherto undescribed species from Burma.—By* CAPTAIN A. T. GAGE, I.M.S.

LIBRARY.

The following new books have been added to the Library during July 1906 :—

BENGAL DISTRICT GAZETTEER. Statistical Tables for Angul, Balasore, Bankura, Bhagalpur, Birbhum, Burdwan, Calcutta, Champaran, Chota Nagpur Tributary, Cooch Behar State, Cuttack, Darbhanga, Darjeeling, Gaya, Hazaribagh, Hill Tippera State, Hooghly, Howrah, Jessore, Khulna, Manbhum, Midnapore, Monghyr, Murshidabad, Muzaffarpur, Nadia, Orissa Tributary States, Palamau, Patna, Puri, Purnea, Ranchi, Saran, Shahabad, Sikkim State, Singhbhum, Sonthal Parganas, and 24-Parganas. *Calcutta*, 1905. 8°.

Presd. by the Govt. of India, Home Dept.

Bernard, *Dr.* Ch. Eene ziekte van de Cocospalm veroorzaakt door pestalozzia palmarum. [*Batavia*, 1906.] 8°.

——— Eene ziekte van Hevea, veroorzaakt door de Djamoer oepas. [*Batavia*, 1906.] 8°.

Presd. by the Botanic Institute of Buitenzorg

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44. *Gentiana Hugelii*, Griseb., *redescribed.*—*By* Otto Stapf, Ph.D. *Communicated by* I. H. Burkill.

Baron Karl von Hügel travelled in the North-Western Himalaya in 1835, journeying from Simla *via* Bilaspur, Jwala-Mukhi, and Jamu to Srinagar, thence returning to the plains *via* Mozufferabad and Hussein Abdal: he collected plants among other objects, and the collection which he made lies in the Hof-Museum at Vienna. Grisebach described and dedicated to him a species of Gentian which he had obtained in what he calls "High Tibet," probably meaning thereby the range to the south of the valley of Kashmir which he crossed by the Pir Panjal pass, 11,400 feet above the sea-level. But Grisebach did not describe the plant quite accurately; and subsequent writers have been puzzled by what is stated, especially by the statement that the seeds are winged. The following is a re-description of the plant from the half-dozen preserved specimens, which were kindly lent to me at Kew for the purpose. The drawings have been made by Miss Smith of the Kew staff.

Gentiana Hügelii, Griseb.

Annua 9-10 cm. alta, glaberrima *Folia* infima (paria 2–4) rosulata, superiora internodiis 1·5–2 cm. longis separata, sessilia, elliptica vel elliptico-oblonga, obtusa, plerumque minute apiculata, majora ad 2·5 cm. longa, ad 1·5 cm. lata, crassiuscula, margine cartilagineo. *Flores* capitato-fasciculati, rarius in ramis accessoriis vel caulibus depauperatis solitarii; bracteæ exteriores capituli subrotundæ, apiculatæ, foliosæ, cæteræ angustiores tenuiores, calycibus semper breviores *Calyx* subovoideo-oblongus: tubus 1 cm. longus, tenuiter membranaceus; lobi ovati vel elliptico-ovati, acuti vel obtusi, ad 4 mm. longi, superne herbacei, cartilagineo-marginati, sinubus interjectis angustis. *Corolla* circiter 17 mm. longa; tubus oblongus, basin versus attenuatus, 14 mm. longus, intus infra lobos fimbriatus fimbriis 2·5–3 mm longis; lobi ovati obtusiusculi vel subacuti, 3–5 mm. longi, plicis interjectis in lobos ovatos laciniato dentatos 2·5 mm. longos productis. *Antheræ* lineares, 2·5 lin. longæ; filamenta 4–5 mm. longa. *Ovarium* obovoideum, vertice 2-cristatum, crista denticulata; stylus nullus; stigmata linearia, superne dilatata, 2–5 mm longa, revoluta. *Capsula* obovoidea, clavata, 8 mm. longa, superne 4 mm lata, 2-cristata cristis membranaceis denticulatis ad 1·5 mm. latis. *Semina* oblonga, 0·8 mm. longa, exalata, testa lævi.

"Hoch Thibet" (Herb. Mus. Palat. Vindob).

45. *Bibliomancy, Divination, Superstitions, amongst the Persians.*— *By* Lieut. Colonel D. C. Phillott, *Secretary to the Board of Examiners, Calcutta.*

(*a*) *Istikhāra* استخارة [1] signifies asking divine direction as to any course to be pursued about which the seeker is doubtful, by opening the Qur'ān and finding the answer on the right-hand page.

The seeker first repeats the *Sūratu-l-Fātiḥah* or the "Opening chapter of the Qur'ān," the *Sūratu-l-Ikhlāṣ* on the declaration of God's unity (chapter 112), and the 58th verse [2] of the *Suratu-l-An'ām* or "The Chapter of the Cattle" (6th chapter), three times, and then opens the Qur'ān. Sometimes seven *Ṣalawāt* are repeated in addition. Or else the seeker first *Si ṣalawāt mī-firistad*, i.e., he says three times اللهم صل على محمد وعلى آل محمد "Oh God, bless Muḥammad, and the family of Muḥammad. He then says one *Al-ḥamd* (*i.e.*, the *Fātiḥa* or opening chapter), and three *Qul huwa 'llāh*, and lastly the *Āya-yi Mafātiḥu-l-Ghaib*, which is the 58th verse of the sixth chapter, the "Chapter of the Cattle." Then saying *Allāhumma istakhir-nī*.[3] "Oh God, choose for me," the book is opened at random by the forefinger of the right hand, and the top line of the right-hand page is selected. If no verse begins in this line, the seeker turns back and goes to the beginning of the verse. Verses issuing commands or expressing piety, etc., are propitious.

Another method is, after opening the book as above, to count the number of times the word *Allah* occurs on the page, and then to turn over (forward) the same number of pages and again count the same number of lines from the top: then if no verse commences in that line to read forward and take the first verse that occurs after that line.

The answer is of course often extremely vague. In addition to the above, the Persians, even the most irreligious, generally take an *istikhāra* from the *tasbīḥ* or "rosary." [4] The *Fātiḥa* is recited three times and any two beads are taken hold of at random. As the first bead between these two points slips through the finger, the seeker says *Subḥānu-'llāh*, "Glory to be God." As the second is slipped, *Al-ḥamdu lillāh*, "Praise be to God": as the

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[1] *Istikhāra*, lit. "asking favours." The *istikhāra* that the Prophet taught was a prayer asking for guidance.

The seeker for an *istikhāra* goes to a *mullā*, who takes no fee—except perhaps an offering of sweets or fruit.

One form of bibliomancy in England is to take an omen from the first word of the first person heard reading the Scriptures. Taking an omen from a Bible suspended by a key is still common.

[2] *Ṣalāt* صلوة is properly any prayer, being the Arabic equivalent of *namāz*: by the Persians, however, the word has generally a special signification.

[3] Incorrect Arabic for *khir-nī*, "choose for me."

[4] There are several ways of making this *istikhāra*. One way is merely a game of "odds and evens."

the third is slipped, لا, *Wa lā*,[1] = "don't do it." These expressions are repeated in this order till the last bead is reached. According as the first, second, or third expression falls on the last bead, the reply is favourable, indifferent, or negative, *i.e.*, *khūb*, *miyāna*, *yā bad*.

From laziness, the *Fātiḥa* is in practice usually recited only once. This form of *istikhāra* takes little time or trouble—for most Persians carry a rosary in their pockets as a kind of play-thing—and is resorted to on the most trivial as well as on the most serious occasions.[2]

(*b*) *Tafāul* تفأل "auguring," is generally applied to seeking a *fāl* or "omen" from *Ḥāfiẓ*. A volume of the *Dīwān* of the poet is held in the left hand and some such words as the following are said:—*Yā Khwāja Ḥāfiẓ-i Shīrāzī! tu kāshif-i har rāz-ī; barāy mā, biyā va yak fāl-ī munāsib-i ḥāl biyandāzī*,[3] "Oh Khwāja Ḥāfiẓ of Shīrāz! thou art the revealer of hidden things: come and give us a good omen": or *Yā Khwāja Ḥāfiẓ-i Shīrāzī turā bi-ḥaqq-i Shākh-i Nabāt qasam mī-dihum ki kull-i aḥrāl rā dar īn kitāb-i khud mu'ayyan kun*. "Oh Khwāja Ḥāfiẓ of Shīrāz! I adjure thee by Shākh-i Nabāt[5] to point out in this book of thine all I have to do." The book is then opened. The eyes are closed when doing so, and the volume is opened at hazard[6]; the first line of the right-hand page is taken, and the seeker then turns back to the beginning of that *ghazal*. If the omen is favourable, the *ghazal* following it is also read: this is called the *Shāhid-i ghazal-i awwal* "The confirmer of the first ode," and if propitious, is acted on in preference to the first.

The Persians also consult astronomers and geomancers[7] before starting on a journey, closing a bargain, or even changing a sleeping-room in a house; they believe, too, in lucky faces, fortunate numbers, and unlucky days.

Geomancy is supposed to have been discovered by Daniel. Geomancers, therefore, before casting say, "*Yā Ḥazrat-i Dānyāl*."

(*c*) The 13th of *Safar*, the second month in the Muslim calendar, and the 13th of the Naurūz, are specially ill-omened

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[1] *Wa lā*, the first words of the formula, *Wa lā Ilāha illa'llāh*

[2] "Shall I or shall I not take a purge?" out come the beads. Many a European doctor, anxious to perform a critical operation, has fretted and fumed because day after day the beads declared the day to be unfavourable.

[3] *Fāl giriftan*, "to seek an omen"; *tafā'ul zadan*, "interpreting or acting on the omen."

[4] There is no fixed formula.

[5] *Shākh-i Nabāt*, lit. "slip of sugar-candy"; the name of the beloved of Ḥāfiẓ: the word *Shākh* gives the idea of something tall and willowy.

[6] By running the nail of the forefinger of the right hand through the top edges of the leaves, the book being held in the left hand by the back, front edges towards the sky.

[7] *Munajjim*, "astrologer," and *'ilm-i nujūm*, "astrology"; *falakī*, "astronomer"; and *'ilm-i hai'at*, "astronomy." *Rammāl*, "geomancer"; *'ilm-i raml*, "geomancy"; and *raml andākhtan*, "to divine by geomancy"; *zīch-i ṭāli' kashīdan*, "to cast a horoscope." *Fālgīr* is applied to any professional omen-taker.

days [1]; the 5th and 13th of every month less so. To avoid the evil that might overtake them were they to remain indoors, all Persians, on the 13th of the *Naurūz*, leave their homes and spend the day in the open air from sun-up to sun-down. Disaster follows a quarrel during these hours. On the last Wednesday of *Safar* boys and girls jump over a fire.[2]

Omens are also taken from birds, animals, the number of times a person sneezes, the crossing of a threshold with the right or left foot first, and many other ways.

Persians have a firm belief in the evil eye, *chashm-i bad* or *chashm-zakhm*.[3] Anyone may be possessed of the evil eye without knowing it.[4] Some superstitious people even say, "*Mā shā'Allāh*" when admiring their own countenances in a mirror, thus warding off the evil effects of their own admiring eyes.

Blue wards off the evil eye, and for this reason valued animals are adorned with beads of this colour. Also the *isfand*, wild rue seed, burnt in the fire has a like virtue.

Pretty children are often purposely kept dirty and unkempt and are further guarded from malign influences by amulets, *ta'wīz*.[5]

Carpets are generally woven by the tribes' people with some small defect in the pattern, to avert the evil eye.

Strange to say, a pig [6] in the stable will ward off the evil eye from the horses and mules.

Certain cities, the houses of *Mullās*, British Consulates, a stable, etc., all constitute sanctuary or *bast*. The writer once saw a soldier clinging to a big gun in the square of Kerman, declaring it was *bast*. However, in spite of his protestations he was forcibly removed by the Governor's *farrāshes*.

The time of Nau Rūz is a general holiday. People make picnics for 13 days, and every master is supposed to present his

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[1] *Manḥūs* or *bad*.

[2] The Prophet died in the month of *Ṣafar*. It is supposed that the Last Day will fall on the last Wednesday of this month.

[3] The Shah has the right to see every woman in the kingdom unveiled, and the royal glance is fortunate. The *mujtahids* have the same right, being considered *maḥram*.

[4] *In mard bad-chashm ast*, or *chashm-i shūr* (or *shūm*) *dārad* (m. c.): "this man has the evil eye"; *in shakhṣ zabān-ash shūm ast* (m. c.): "this man always prophesies unlucky things."

[5] *Bāzū-band*, a charm made by writing a text, wrapping it in *bulghār* or scented leather, which is then bound on the child's arm. An amulet is also called *ṭilism* or "talisman."

Dam-rāhī, more commonly *sar-rāhī*, is money expended in charity on the threshold by a departing traveller to insure a safe return.

In India some Muslim women bind a coin on the arm of a departing relative, to be expended in charity on his safely reaching the journey's end.

[6] Tweedie mentions a wild boar being kept in the stables at Baghdad Some say the breath of a pig is good for horses. In 'Arabistān, pig's flesh is said to be eaten under the name of *gūsfand-i Farangī*. Ham in Persia is sometimes called *gūsht-i bulbul*, a name said to have been invented by a telegraph clerk

The Baluchis of Bampur in Persian Baluchistan, a very different-looking race to the fine people near to the Dera Ghāzī Khān Frontier in India, eat wild pig and also foxes.

servants with one month's pay. The chief of a Dervish sect will auction certain sights, such as the Governor's Palace, the British Consulate, etc., to his followers. The purchaser erects a tent and blows a horn and refuses to move on unless given a satisfactory sum over the sum he paid for the site.

Persians attribute misfortunes to the revolution of the heavens, to the "evil eye" of time, to the world, etc.[1]

The influence of the heavens on the fortunes of man appears to be an ancient superstition dating back to a pre-Islamic period. It has been supposed that Persians attribute their ills to the heavens to avoid the appearance even of attributing misfortune to the Deity. This is not, I think, the case, for the Persians still believe that the revolution of the skies actually affects man's fate. Muslims who wish to avoid the appearance of ascribing ill to the Deity, attribute the occurrence to Fate, *Qaẓāʾ*, *Qadar* or *Taqdīr*. In the religious drama of Ḥusain, the sky is accused of being the author of his misfortunes.

The following poetical quotations exemplify this belief :—

Āy charkh-i falak kharābī az kīna-yi tust. O. K.

"Ah! wheel of heaven to tyranny inclined."
(*Whin. Trans. Rub. 25.*)

Īn charkh-i jafā-pīsha-yi ʻālī bunyād
Hargiz girih-i kār-i kas-ī rā na-gushād
Harjā ki dil-ī dīd ki dāgh-ī dārad
Dāgh-ī dīgar-ī bar sar-i ān dāgh nihād. O. K.

"The wheel on high, still busied with despite,
Will ne'er unloose a wretch from his sad plight;
But when it lights upon a smitten heart,
Straightway essays another blow to smite."
(*Whin. Trans. Rub. 154.*)

Āy charkh chi karda am turā, rāst bi-gūy,
Paivasta figanda-ī marā dar tak u pūy? O. K.

"Oh wheel of heaven, what have I done to you
That you should thus annoy me? Tell me true."
(*Whin. Trans. Rub. 499.*)

Chūn lāla bi-Nau-Rūz qadaḥ gīr bi-dast
Bā lāla-rukh-ī agar turā furṣat hast
Mai nūsh bi-khurramī ki īn charkh-i kabūd
Nāgāh turā chu bād gardānad past. O. K.

"Like tulips in the spring your cups lift up,
And with a tulip-cheeked companion, sup
With joy your wine, or e'er this azure wheel
With some unlooked-for blast upset your cup."
(*Whin. Trans. Rub. 44.*)

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[1] *Falak, Dunyā, Zamāna, Dahr, Gardūn, Charkh, Chashm-zakhm-i mūna, etc.*

46. *Bulbophyllum Burkilli, a hitherto undescribed species from Burma.*—By A. T. Gage.

Amongst the plants collected by Mr. I. H. Burkill, Reporter on Economic Products to the Government of India, during his tour in Burma in the early part of 1904, and presented by him to the Royal Botanic Garden, Calcutta, was a small orchid found growing in an open forest of teak, bamboo and Strychnos, near the town of Mya-wadi in the Amherst district, between the Dawna hills and the Siamese frontier. Quite recently this orchid has flowered in the Calcutta Botanic Garden, and, as it has been found to be a hitherto unknown species, the following description of it is offered:—

Bulbophyllum Burkilli, Gage, sp. nov.—Typus et icon in herbario horti botanici regalis calcuttensis. *Rhizoma* tenue, circa 1·5 mm. crassum; radices filiformes, circa 1–3 mm. longæ, pallide virides, glabræ, cæspitosæ. *Pseudo-bulbi* approximati, ovoidei, circa 1 cm. longi, 9 mm. crassi, pallide virides, glabri, unifoliati. *Folia* subsessilia, elliptica vel elliptico-oblonga, apice acuta, basi obtusa, 3-4·3 cm. longa, circa 1 cm. lata, crassiuscula, glabra, integra. *Pedicelli* solitarii, uniflori, e basi ascendentes, 2-3 cm. longi, pallide-virides, rubro-punctati. *Bracteolæ* 2–3, minutæ, basilares. *Sepala* subæqualia, integra, triangularia, acuta, viridia, obscure 5-nervia, 1 cm. longa, 6 mm. lata, lateralia in columnæ pede adnata. *Petala* minuta, 2–2·5 mm. longa, 0·5 mm. lata, oblonga, acuta, integra, alba, purpureo 3-nervia. *Labellum* sessile, trigonum, integrum, recurvatum, viride, 2·5 mm. longum, 1·8 mm. latum, basi incurviter bi-denticulatum, supra in medio depressum, infra canaliculum medium marginibus postice incurvatis exhibens. *Columna* brevis, apice et antice bi-denticulata. *Anthera* oblonga; pollinia 4, duo interiora minora. *Capsula* non visa.

Burma Inferior.—In silvis prope oppidum Mya-wadi in pago Amherst et haud procul a finibus siamensibus, *Burkill!*

Adopting the divisions of the Eu-bulbophyllum section of the genus as given in the *Flora of British India*, this species would come into subsection A. "Flowers solitary" (F. B. I. v., 753), and the second division of that section. "Column with two long teeth or spines at the top" (F. B. I. v., 756). Under this, five species are described, *viz*:—*B. leopardinum*, Lindl., *B. Griffithii*, Reichb. f., *B. Dayanum*, Reichb. f., *B. membranifolium*, Hook. f., *B. moniliforme*, Parish & Reichb. f.

Of these, the first two and the last two have the lip stipitate. *B. leopardinum* and *B. membranifolium* are remarkably like each other; and it is difficult to get hold of distinguishing characters.

The following artificial key is an attempt to facilitate the recognition of the species :—

Lip stipitate—

Leaves large, 7–20 cm. long

Columnar spurs stout ... *B. leopardinum.*

Columnar spurs long, falcate ... ... *B. membranifolium.*

Leaves small, less than 7 cm. long

Pseudo-bulbs ovoid; flowers 2·5 cm. in diam. ... *B. Griffithii.*

Pseudo-bulbs pisiform ; flowers 8 mm. in diam. *B. moniliforme.*

Lip sessile, trigonous—

Flowers ciliate ; petals red ... ... *B. Dayanum.*

Flowers eciliate ; petals white ... ... *B. Burkilli.*

Of the Burmese species, *B. Burkilli* is nearest to *B. Dayanum* agreeing with it in the size of leaf, the absence of a scape, the sessile trigonous lip with incurved uncinate basal auricles and short columnar teeth. *B. Burkilli* is, however, a smaller plant than *B. Dayanum*, and has smaller flowers than the latter. Of the Siamese species so far described *B. monanthos*, Ridley, (Journ. Linn. Soc. *Bot.* xxxii., p. 271) appears to be nearest to the species now described, from which it differs amongst other things in having a lanceolate flat lip, yellow with a purple spotted base. Although for Indian botanists who may confine themselves to the Flora of British India the position assigned to *B. Burkilli* above has the advantage of convenience, it probably with more correctness should be placed in Ridley's *Monanthaparva* section, which includes one-flowered *Bulbophylla* of small size.

47. *Notes on Some Rare and Interesting Insects added to the Indian Museum Collection during the Year 1905-06.*—*By* C. A. Paiva, *Entomological Assistant, Indian Museum. With a prefatory note by* N. Annandale.

So little is known regarding the distribution of the Insects of India that exact records of carefully identified and labelled specimens are still important. No apology, therefore, need be made for communicating the present paper to the Asiatic Society of Bengal. It is within my knowledge that all the identifications have been made with the greatest care and that the localities and dates attached to the specimens are authentic. I should like, however, to call the attention of the members of the Society to one aspect which the publication of such a paper bears. The records given are only those which add something new to what has been already published. With a few exceptions they depend on collections made hastily and at odd moments during the course of a month by two collectors who have a great deal of other work to do; and these collections were not made in inaccessible parts of India, but in Calcutta and the Darjiling and Purneah districts. This paper may therefore be said to illustrate our ignorance of Indian Entomology. It contains no identifications of species hitherto unnamed, not because specimens of new species did not occur in the collections on which it is based, but because such specimens have been referred for determination and description, whenever possible, to specialists in Europe and America. I would enter a plea for the study of the distribution of the common Insects of India. The publication of those volumes of the "Fauna of India" series which have already appeared, has made this study possible, as regards several interesting groups, for the naturalist who has no very great expert knowledge but is prepared to devote time and patience to the labelling and identification of his specimens.

N. Annandale.

The following notes contain records of some rare and interesting specimens lately added to the collection of the Indian Museum. The majority of them belong either to the Hymenoptera, or the Hemiptera. As regards the former group I have followed the nomenclature of Col. Bingham, and as regards the latter that of Mr. W. L. Distant, in the volumes of the "Fauna of British India."

I am indebted to Dr. N. Annandale, Officiating Superintendent of the Indian Museum, who has read through the manuscript, for his numerous suggestions and corrections.

APTERA.

LEPISMIDÆ.

Acrotelsa collaris (Fabr.).

Lepisma collaris, *Fabricius*, *Entom. Syst.* ii. (1793), p. 64: Lepisma collaris, *Burmeister*, *Handb. d. Entom.* v. 2 (1838), p. 457: Lepisma niveofasciata, *Templeton in Trans. Entom. Soc.* v. 3 (1843), p. 302: Lepisma collaris, *Gervais*, *Walk. Ms. Apt.* v. 3 (1844), p. 453: Lepisma cincta, *Oudemans*, *Weber*, *Zoolog. Ergebnisse* v. 1 (1890), p. 80, t. 6, fig 1: Acrotelsa collaris (Fabr.), *K. Escherich*, *Bibliotheca Zoologica*, xviii. (1905), p. 107, figs. 43*a-b*, and pl. I. fig. 3.

This large Fish Insect was obtained by Dr. N. Annandale in Calcutta. It may be quite common in houses among old books, etc., but very few specimens have been collected in Southern Asia In fact this is the first one recorded from India. It has a very wide distribution, having been recorded from the West Indies, La Guayra, Curacao, Maracaibo, Dahoma, the Seychelles, Java, Ceylon and Madagascar.

ORTHOPTERA.

BLATTIDÆ.

Periplaneta bioculata, De Sauss. MS.

There is a specimen in the Indian Museum Collection, labelled by de Saussure as "*P. bioculata*, female larva," together with two others which were collected by Dr. N. Annandale at Chakradharpur, Chota Nagpur, under stones in March, and several from Java (*Forbes*).

Some of these specimens are in all probability adult wingless females, as there can be seen in nearly every one at the sides of the mesonotum and metanotum, small pieces separated by distinct sutures, which are traces of rudimentary alar organs. The specimen sent to M. de Saussure was in a very bad condition and two of the spots were covered by the metanotum.

As the species does not seem to be described in print, I append a diagnosis of it.

Diagnosis—

Black, shining, wingless, elliptical, smooth, with six yellowish brown spots above. Head extending very slightly beyond the anterior margin of the pronotum; black, narrowest between the antennæ, and with two minute creamy spots near the inner margins of the antennal cavities.

Antennæ black, becoming brownish towards apex, filiform

and moderately pilose throughout their length ; about half the length of the body. Eyes small, black, with very minute grey spots, scarcely visible, being covered by the pronotum. Pronotum black, hood-shaped ; anterior margin slightly arched, lateral margins rounded, with a slight fold anteriorly, near the region of the eyes ; posterior margin nearly straight. Abdomen beneath black. Coxæ smooth, flat, black, with a few minute spines above and several larger ones below. Tibæ very spinose, tarsi more or less setose, the last joint lighter in colour than the preceding joints, ending in a pair of simple claws.

The six spots are arranged as follows, a pair on the disc of the mesonotum, a pair at the base of the abdomen, and a pair near the apex of the abdomen.

The apex of the abdomen is furnished with a pair of "torpedo" shaped cerci, which are black, smooth on the inner surface, densely pilose outwardly.

Total length, 17-20 mm. Maximum breadth of the pronotum, 8·5 mm.

Localities—

Chota Nagpur, Chakradharpur: (*Annandale*), Vizagapatam, and Java (*Forbes*).

A specimen from Vizagapatam, which has been named by de Saussure, is in every respect similar to those from Chakradharpur, except that the colour of the eyes is a little different and that they appear more conspicuous in the South Indian specimen. These differences cannot be of much importance, as in the Javan specimens the colour of the eyes is not constant, being nearly white in one specimen. The change may be due to preservation.

HYMENOPTERA.

POMPILIDÆ.

Pompilus hecate, Cam.

Bingham in Blanford's *Fauna of British India, Hymenoptera*, i., p. 171.

A specimen of this rare species was obtained by the Museum collector in Calcutta. It agrees with Col. Bingham's description in every respect and I have no doubt about its identity.

The only other specimen hitherto recorded, is the one in Rothney's Indian collection. This specimen is not perfect, having, as Col. Bingham states, "no head, and being otherwise damaged." There are two others in the Dudgeon collection now in the Indian Museum. They are from the Kangra Valley.

SPHEGIDÆ.

Sphex nivosus (Smith).

Bingham in Blanford's *Fauna of British India, Hymenoptera*, i., p. 244.

On examining the Hymenoptera which was received by the Indian Museum from the Seistan-Afghanistan Commission, I found a Sphegiid which looked interesting, being quite different to those which one is accustomed to see in the plains. On further examination and comparison, I identified it as *Sphex nivosus*. It is the only specimen now in the Indian Museum collection, and from Col. Bingham's note on it, there does not seem to be more than one specimen in the collection of the British Museum. The locality recorded by him is "Northern India," which is rather vague. Smith and Cameron give the same vague locality as Bingham. Rothney, during the many years he spent in the North-West Provinces (now the United Provinces), does not seem to have obtained even a single specimen.

Ampulex novaræ, Sauss.

Bingham in Blanford's *Fauna of British India, Hymenoptera*, i., p. 256.

Along with *Pompilus hecate*, Cam., the Museum collector obtained a single specimen of this species in Calcutta. There are two (a ♂ and a ♀) in the Dudgeon collection now in the Indian Museum. These are from the Kangra Valley, 4500 feet, and were taken in December, 1899.

Colonel Bingham states that he had no specimens before him when compiling his monograph on the Indian Hymenoptera for Blanford's "Fauna."

The only localities hitherto recorded are Darjiling and Hongkong. Among the unidentified specimens of *Ampulex* in the Indian Museum Collection, there is a series of specimens from Bangalore, which I have also identified as *A. novaræ*.

Judging from the localities mentioned, this species appears to have a very wide range.

Oxybelus canescens, Cam.

Bingham in Blanford's *Fauna of British India, Hymenoptera*, i., p. 320.

A single specimen of this little Sphegiid was obtained by Messrs. Richardson and O'Sullivan of the Indian Museum, during a recent visit to Siliguri, N. Bengal.

It is doubtless a rare species, and very little is at present known about its distribution. Barrackpore, near Calcutta, having been the only locality recorded hitherto.

EUMENIDÆ.

Eumenes conica (Fabr.), var.

Bingham in Blanford's *Fauna of British India, Hymenoptera*, i., p. 343.

Two peculiar specimens (a ♂ and a ♀) of a Eumenid were recently obtained by the Museum collector in Calcutta. They agree with Col. Bingham's description of this species as regards both size and form, but their coloration differs remarkably from that of the description, as well as from that of the specimens in the Indian Museum collection.

In the female the head instead of being yellow is red. It is very nearly the same colour as the antennæ. The posterior portion of the mesonotum is very much darker than the anterior, being very nearly brownish-black.

The base of the petiole is black and it has also a subapical well-defined black transverse band above. The transverse medial band on the second abdominal segment above is entire, not medially interrupted.

The bases of segments 3-6 above are also black, but cannot be seen distinctly, owing to the overlapping of the anterior segments. The apical margins of segments 3-5 are very narrowly yellowish.

In the male the head is the same colour as the female, *viz.*, red. The posterior portion of the mesonotum is very much darker than the anterior, being nearly black. The second abdominal segment appears to have two transverse black bands above, but on closer examination the second band near the apical margin is seen to be in reality the black transverse band on the basal margin of the third segment seen through the semi-transparent dorsal plate of the second abdominal segment. The third to the fifth abdominal segments have at their bases above, transverse blackish-brown bands. The sixth abdominal segment has at its base, above, a medially interrupted yellowish transverse band followed by a dark brown transverse fascia, and its apex very narrowly reddish-yellow. The seventh abdominal segment above has at its base a transverse dirty yellow band, with the apical half brown enclosing a slightly reddish-yellow spot. The abdomen beneath is much lighter in colour.

VESPIDÆ.

Polistes adustus, Bingh.

Bingham, in Blanford's *Fauna of British India, Hymenoptera*, i., p. 397.

Several specimens were obtained by Dr. N. Annandale at Kurseong, 5000 feet, E. Himalayas, where it is rather common, in May, along with a nest, which was found attached to a boulder on the side of a hill.

There is a slight difference between these specimens and those described by Colonel Bingham. The post-scutellum, instead of having a square dark-red spot at each lateral angle is entirely red; this difference being perhaps varietal.

The nest resembles that of *Polistes hebræus* to a very marked degree.

The following is a list of Hymenoptera obtained on or near the Perso-Baluch Frontier, by the collector attached to the Seistan Boundary Commission (1903-05) under Sir A. H. McMahon. There are several other species which I have been unable to identify, some of which may be new.

Sphegidæ :—

Notogonia subtessellata (Smith),
Sceliphron bilineatum (Smith),
Sphex nivosus (Smith),
Stizus rufescens (Smith),
Bembex trepanda, Dalhb.

Eumenidæ :—

Eumenes dimidiatipennis, Sauss.

Vespidæ :—

Polistes hebræus (Fabr.),
Vespa magnifica, Smith,
„ orientalis, Linn.

Apidæ :—

Crocisa ramosa, Lepel,
Anthophora quadrifasciata (Villers).

Formicidæ :—

Myrmecocystus setipes, Forel.

HEMIPTERA.

PENTATOMIDÆ.

Storthecoris nigriceps, Horv.

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 78.

In the old Indian Museum collection there was only one very badly damaged specimen, which was from the Dhunsiri Valley and was obtained by Col. Godwin-Austen. It is labelled "*Scotinophara tarsalis*?" Its condition is too bad to allow of comparison with the specimen which is here noted and which was collected by me at Purneah, N. Bengal, in May last. A second specimen has been obtained by Dr. N. Annandale at light on the 16th July in Calcutta. The other Indian localities from which this species has been recorded are the Khasi Hills (*Chennell*); and Sibsagar (*Coll. Dist*). It has also been reported from Java and Borneo, and may possibly be found to extend through Burma to the Malay Peninsula.

In life it is so much like dry grass that it cannot be easily seen, and even when on the ground it escapes notice. Diligent search may prove a wider distribution of the species.

Sciocoris indicus, Dall., and Sciocoris lewisi, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 126.

There were no specimens of the above two species in the Indian Museum collection, but I obtained several of the genus in the Purneah District in May last, and on comparison with the descriptions given by Distant, I have identified two as *S. indicus* and eight as *S. lewisi*.

S. indicus has rather a wide range in India, having been recorded from North India (*British Mus.*), Malabar (*Coll. Dist.*), and Coonoor (*Brit. Mus.*).

S. lewisi seems to be less widely distributed. The only localities mentioned by Distant being the Khasi Hills (*Chennell*), and Ceylon (*Lewis*).

Æschrocoris ceylonicus, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 163.

Among the many Insects I collected in the Purneah District in May last, I was fortunate enough to get one specimen of this

species. It is the first that has been recorded from India proper. and is the only one now in the Indian Museum collection. The type specimen is in the British Museum and was collected by Mr. E. E. Green in Ceylon. There is no other locality on record. It is quite possible that the species may be found in any part of India.

Megymenum severini, Berg.

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 287.

A specimen was obtained at Kurseong by Dr. N. Annandale in May last. There were none in the Indian Museum Collection, although there were several of *M. inerme*, *M. brevicorne*, *M. parallelum*, and *M. subpurpurescens*. These five species are the only ones as yet recorded from India.

Urolabida uniloba, Stål.

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 306.

New to the Indian Museum collection and obtained by Dr. N. Annandale at Kurseong in May.

COREIDÆ.

Stenocephalus lateralis, Sign.

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 406.

Obtained by me in the Purneah District in May. It does not seem to be very common there. I obtained only one specimen. It has hitherto been recorded from Bombay and Madras (*Coll. Dist.*), and Ceylon (*Green*). This species must also be rather widely distributed.

Physomerus grossipes (Fabr.).

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 383.

One specimen was obtained by Dr. N. Annandale in May, at Kurseong, E. Himalayas, and ten others by the Museum collector in Calcutta in June.

Dr. Annandale's specimen agrees exactly with Distant's figure of the species; but those from Calcutta differ from Distant's figure in that the two distinct longitudinal oblique pale ochraceous lines on either side of the central longitudinal line on the

pronotum, are very indistinct, so much so that in one or two specimens they are entirely obsolete.

Distant, however, omits to mention the presence of these two outer lines in his description of the species, although they are quite distinct in his figure.

In the description Distant says that the posterior *tibiæ* are strongly incrassated. This appears to be a misprint. He must mean the posterior *femora*.

Acanthocoris scabrator (Fabr.).

Distant in Blanford's *Fauna of British India, Rhynchota*, i., p. 385.

Doubtless a very common and widely distributed species. There are several specimens in the Indian Museum collection from Sikkim, Margherita, Bangalore (*Cameron*), Sadeya, Mergui. Tenasserim, the Andaman Islands, and Japan (*Pryer*). The species has also been recorded by Distant from the Khasi Hills (*Chennell*); Bombay (*Leith*); Ceylon (*Parry*; *Brit. Mus.*); Burma; Karenni (*Fea*). Also from many of the islands of the Malayan Archipelago. I obtained a specimen in Calcutta on June 28th in one of the verandahs of the Museum.

LYGÆIDÆ.

Prostemmidea mimica, Rent.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 18.

A few specimens of this little bug were obtained by me in the Purneah District. In life it is very much like a little Parasitic Hymenopteron, which I have also taken in Purneah. All the specimens obtained were caught during the day, on the railings of a house in Katihar, Purneah District. These are the only specimens in the Indian Museum collection. The type was obtained at Bombay (*Wroughton*).

Peritrechus æruginosus, Rent.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 76.

Obtained in the Purneah District in May. This is the first specimen from India proper. The only other one on record was obtained by Fea at Palon, Mandalay, Burma. Another specimen was found sheltering itself in a cocoon of *Actias selene*, which was sent to the Indian Museum by Major A. Manners-Smith, from Katmandu, Nepal, in July.

PYRRHOCORIDÆ.

Pyrrhopeplus pictus, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 116.

Not previously represented in the Indian Museum collection. One specimen obtained at Kurseong in May by Dr. N. Annandale. Recorded hitherto from Sikkim (*Coll. Dist.*); Sylhet (*Brit Mus.*); Shillong, Naga Hills (*Doherty*); Burma, Karenni (*Fea*).

REDUVIIDÆ.

Tribelocephala indica, Walk.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 220.

The only species of the small genus *Tribelocephala* which is known to occur in India. I obtained one specimen in the Purneah District in May. It is new to the Indian Museum collection and gives the only definite locality in India proper, the specimen in the British Museum having "North Bengal" as its locality. It has also been recorded from Peradeniya, Ceylon (*Green*).

Pygolampis fœda, Stål.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 223.

One specimen from Purneah (*Paiva*) not recorded from India proper before. The localities mentioned by Distant are Peradeniya, Ceylon (*Green*); Karenni, Bhamo, Burma (*Fea*); Malewoon, Tenasserim (*Fea*).

Pygolampis unicolor, Walk.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 223.

Four specimens of this bug have been added to the Museum collection, 2 from Kurseong (*Annandale*); and 2 from Purneah (*Paiva*). All these were taken in May. There were no specimens in the Museum collection before, and the only locality recorded by Distant is "North Bengal."

Reduvius transnominalis, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 251.

One specimen from Purneah (*Paiva*). The only one now in the Indian Museum collection. The British Museum does not seem to possess any, as the only one mentioned by Distant is in the collection of the Vienna Museum. Its locality is given as "North India."

Acanthaspis rama, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 268.

This species was described by Distant in 1904. There were no specimens of it in the Indian Museum collection. In the Atkinson Collection of the British Museum there are specimens from Sikkim and Berhampur.

I was able to obtain only one specimen in the Purneah District, although I saw several which sheltered themselves in crevices of old trees. These crevices were more or less closed up with mud which formed the nests of *Ampulex compressa*. Possibly the bug feeds on the young of this Sphegiid or on the food which is stored up by the adults for the young. I generally came across the bugs in couples. They are very active and difficult to catch.

Ectomocoris elegans (Fabr.).

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 295.

A specimen of this species was obtained by Dr. N. Annandale in Calcutta at light on the evening of July 15th. It is the first that has been recorded from India proper. Distant mentions the following localities:—Burma: Rangoon, Minhla (*Fea*). Tenasserim: Kawkareit (*Fea*). Siam (*British Museum*); several islands of the Malayan Archipelago; Timor (*Doherty*).

Dr. Annandale's specimen differs slightly from Distant's description; the two linear fascia near the lateral margins of the corium being nearly obsolete.

A feature which Distant has omitted in his description is the distinct patches of silvery pubescence on the meso and metasterna, near the region of the intermediate and posterior coxal cavities.

Ectomocoris cordiger, Stål.

Distant, in Blanford's *Fauna of British India, Rhynchota*, ii., p. 295.

Of this apparently widely distributed species there was only one specimen in the Museum, until I obtained another at light in Calcutta, on the 18th July. The first was obtained by me in the Purneah District. The species has been recorded from North Bengal (*Brit. Mus.*); Sylhet (*Stockholm Mus.*); Bombay, Borghat (*Dixon*); Ceylon (*Green*); and the Persian Gulf (*Brit. Mus.*).

Pirates flavipes (Walk.).

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 297.

This species is also new to the Indian Museum collection. It was obtained in the Purneah District in May last. Little is known regarding its distribution. Mr. Distant mentions the following localities:—"North India" (*Brit. Mus.*); Kangra Valley (*Dudgeon*); Bengal, Berhampur (*Atkinson*).

Pirates affinis (Serv.).

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 299.

This species has hitherto been recorded from Assam; the Khasi Hills (*Chennell*); Bombay (*Leith*); Burma: Rangoon, Teinzo, Bhamo (*Fea*); also from the Malay Peninsula, Cochin China, Java and some other islands of the Malayan Archipelago. The only specimen which is now in the Indian Museum collection was obtained by me in the Purneah District in May.

Sphedanolestes pubinotum, and S. Indicus, Reut.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., pp. 339, 340.

A specimen of *S. pubinotum* was obtained by Dr. N. Annandale at Kurseong in May last. In April 1905, Colonel A. Alcock obtained a specimen of *S. indicus* at Sureil, Darjiling (5,000 feet). They are both new to the Indian Museum collection. Sikkim, Darjiling (*Stockholm Mus.*); Assam, Khasi Hills (*Chennell*); Burma, Karenni (*Fea*) are the localities mentioned by Distant for *S. pubinotum*, while *S. indicus* has "India orientalis" (*Stockholm Mus.*) as its locality.

Probably there are no specimens of *S. indicus* in the British Museum Collection, as Mr. Distant states that he was able to examine and compare this species through the kindness of Dr. Sjöstedt.

EPIDAUS ATRISPINUS, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii., p. 372.

Previously recorded only from Mungpoo, Sikkim (*Atkinson, Brit. Mus.*). Two specimens were obtained by Dr. N. Annandale at Kurseong in May last. These are the only specimens in the Indian Museum collection.

CAPSIDÆ.

GISMUNDA CHELONIA, Dist.

Distant in Blanford's *Fauna of British India, Rhynchota*, ii. p. 463.

Obtained by Dr. N. Annandale at Kurseong in May. Dr. Annandale states that in life it closely resembles, both as regards form and colour and as regards movements, a species of Chrysomelid Beetle of the genus *Nodostoma* which was taken with it. The only other locality on record is Mungpoo, Sikkim (*Atkinson Coll., Brit. Mus.*).

DIPTERA.

CULICIDÆ.

TOXORHYNCHITES IMMISERICORS (Walk.)

Toxorhynchites immisericors (Walk.), *Green in Spolia Zelanica*, ii., p. 159; *Theobald, Monogr. Culic.* ii., p. 123: *Megarhinus immisericors*, Walk. (♂), *Theob., Monogr. Culic.*, i., p. 225, pl. vii., fig. 28: *Megarhinus gile ii* (♀), *Theobald Monogr. Culic.*, i., p. 227, pl. ix., fig. 33.

Several specimens of this large Mosquito were obtained by Mr. O. L. Paiva in a garden in Calcutta. They were all found resting on the trunk of a large tree, on the afternoon of July 15th. There was only one female among them, and apparently the females are more scarce than the males. There is also a male specimen in the Indian Museum collection from the Andaman Islands; it was obtained by Major A. R. S. Anderson in July or August, 1905.

These Mosquitoes are indeed handsome creatures, glowing with

iridescent purple and blue tints, together with black and golden tufts at the apex of the abdomen. They vary very much in respect to size, and the males differ remarkably from the females in respect to coloration.

Wherever these mosquitoes abound they will be found on the trunks of trees ; Dr. N. Annandale tells me that he found specimens in the Malay Peninsula in this position, while Mr. E. Green gives the same information as regards Ceylon. I have noticed that these Mosquitoes are rather common in Calcutta during July and August. They are reported to bite very viciously in Southern India, where the bite is considered poisonous. I am unable to state with certainty whether this is the case in Calcutta, but I have been told by a lad who accompanied Mr. O. L. Paiva when the specimens referred to were captured, that he was bitten by one of them, and that the bite was painful.

A short life history of this species will be found in Mr. Green's paper (*op. cit.*). The study of the larvæ of this genus appears to be important, as they have been known to destroy the larvæ of *Culex*.

The localities from which this species has been recorded are :—Makessar in Celebes ; Weigiou ; Mysol and North Ceram ; Amboina ; Ceylon ; Travancore (*James*) ; Malay Peninsula ; Nilghiri hills (*Hampson*) ; Upper Burma (*Watson*) ; Sikkim (*Dudgeon*).

48. *Hájo and his Grandsons.* (*A leaf from the history of ancient Kámarupa*).—*By* SATYARANJAN RAY, M.A., *Rangpur. Communicated by the Philological Secretary.*

The rise of the Koches.

Several *Bhuiyás* or local rulers began to govern the country west of the river *Brahmaputra* after the extirpation of the Khen dynasty by Hossein Shah. The Koches, who were by far the most powerful of them, played an important part during the split up of the Khen dominions. Hájo was their leader who came into marked prominence by subjugating the whole of the modern districts of Rangpur, Jalpáiguri, Goálpárá and Gauháti. Ghorághát alone did not yield to their power.

Hájo's grandsons.

King Hájo had two daughters named Jirá and Hirá, both of whom were married to a Mech chief called Hariyá (or Haridás) who lived in Mount Chikna. The sisters Jirá and Hirá had two sons each,—the former became the mother of Chandan and Madan, and the latter of Vishu Sinha and Sishu Sinha.

Is Hájo an eponymous hero or the maternal grandfather of Vishu and Sishu?

But who was Hájo? Was he really an eponymous hero? We have already stated that he was a Koch chief and the maternal grandfather of Vishu and Sishu, the ancestors of the Cooch Behar[1] and Baikunthapur Rájás respectively. Dr. Latham, in his *Ethnology of India*, considers Hájo as an eponymous hero, representing the Assam tribe of Hojái or Hajong. The Cooch Behar chronicles, however, do not make any mention of Hájo or Hariyá, who evidently belonged to the impure tribe of Mech. The *Assam Buranji*, Dr. Buchanan Hamilton's MS. Accounts, and Captain (afterwards Major-General) T. H. Lewin's Account of the Cooch Behar State as well as other works, tend to corroborate our opinion. Far from disbelieving the existence of Hájo, Captain Lewin clearly states that "Hájo himself, like many other popular persons, was afterwards deified, and is worshipped in several places in Assam. The great temple of Hájo on the north bank of the river *Brahmaputra* attracts yearly to its shrine thousands of worshippers from Bhutan and Thibet, and is also a place of pilgrimage of the Hindus."

Temple of Hájo.

We find the following interesting account of the temple of Hájo in the *Journal* of the Asiatic Society of Bengal: "A large vaulted vestibule, measuring 40 × 20 feet, in front of the old temple of Hájo in Kámrúp, was built by Nar Náráyan, Hájo's great-grandson, in 1550 A.D. He found the temple entirely deserted, and almost lost in impenetrable jungle. He not only repaired it, but endowed it with lands, priests, musicians, and dancing girls. The vaulted brick addition of Nar Náráyan replaced a dismantled edifice of stone, which he had not the skill to restore. The temple is situated on a hill about 300 feet high

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[1] Hwen Thsang, the celebrated Chinese traveller, calls it Kusha-Vihâra. The modern word 'Coooh' is evidently a forced contraction of 'Koch.'

whence, probably, it takes its name, as háju means 'hill' in the Bodo and cognate languages. From the fragments of the old vestibule a rude flight of steps has been constructed, from the tank below to the ancient fane on the hill, in which the object of worship is, in fact, an image of Buddha."[1]

Was Vishu the elder or the younger brother of Sishu? Were they uterine brothers?

So far about Hájo. But there is a gordian knot yet untied. Was Vishu the elder or younger brother of Sishu? Were they uterine brothers? Dr. Buchanan Hamilton says: "Whether Jirá was married or not is not known; but she had a son named Sisu, while her sister (Hira, who was married to a certain Hariya) had a son named Visu. Sisu is regarded as the ancestor of several younger branches of the family, who still possess *zamíndárís* in British districts." The descendants of Sishu Sinha, however, declare that Sishu was the *brother*, and *not the cousin*, of Vishu. Besides, in no other account has the uterine relationship been questioned. It was but natural for the learned doctor to run into some errors, considering his race, religion, want of sufficient authentic materials and the wide difference in manners and customs of the people whose history he was collecting. As regards the main point, I offer the following arguments for considering Sishu Sinha as the younger of the two. There is no doubt that the kingdom to which Vishu succeeded was by far the largest, and that it was the only kingdom which Chandan left to his successor. If Sishu was the elder brother, how could the younger Vishu supersede his elder brother's claim? Sishu was, undoubtedly, famous for his undaunted prowess and military skill. How then could his right have been set aside? How could it be that the elder brother was dubbed a *Raikut*[2] by the younger? How was it that the former held the royal umbrella over the latter's head at his coronation? The idea is quite repugnant from common sense and wholly irreconcilable. All the inconsistencies and incoherence of facts will be removed and a fair solution arrived at if we regard Sishu as the younger brother. In fact there are three traditions about this: *viz.*, (1) That Hirá had two sons, of whom Sishu was the elder. (2) That Vishu was the son of Hirá (wife of Hariyá), and Sishu, the son of Jirá (her marriage being unknown). (3) That of the two sons of Hirá, Vishu was the elder and Sishu the younger. Does not the last tradition cut the gordian knot?

Traditions about Hirá.

It is said that Hirá was eight years old when she was married to Hariyá. She was much fond of worshipping the supreme Godhead Mahádeva, and people invented a fiction that Mahádeva used to visit her in the form of a *Yogi* as she was no other than the incarnation of the goddess Bhagavati, his divine consort. She is said to have been conceived by this divinity in

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[1] *Vide* the Journal of the A.S.B. 1855, p. 9. *Vide* also Dalton's Ethnology of Bengal, pp. 89-90.

[2] As regards the various interpretations of this word and our suggestion as to the etymological and probable meaning of this technical term, a discussion will follow in a subsequent issue.

her fourteenth year and gave birth to two sons, Vishu Sinha and Sishu Sinha mentioned above.[1]

Origin of Hirá as explained in the *Yogini Tantram* and *Kálikú Purá-nam.*

The origin of Hirá, from whom sprang the Cooch Behar and Baikunthapur Houses, is explained both in the *Yogini Tantram* and *Kalikú Purúnam* in a mythological garb. We will satisfy the curiosity of our readers by giving a running summary of the whole account as embodied in the aforesaid works. The myth in a nutshell is this: Once upon a time the goddess Bhagavati asked Mahádeva, after bowing her head to him in due reverence, "O God of gods, I long to hear the origin of Hirá Kochni and the Koches generally; so, be gracious enough, O Lord, to describe their full history and thereby satisfy my curiosity." Whereupon, Mahádeva, desirous of pleasing his divine spouse, began to tell her as follows: "O my dear Párvati, in *Satya Yuga* (*i.e.*, the golden age), Parasuráma, the son of Jamadagni, defeated the Koch kings seven times in fight. Virya, the redoubtable Koch Chief, and his discendants, were put to death by Parasuráma. Many people of the Koch kingdom fled for their lives and began to settle at *Kámapītha*. They became narrow-minded and prone to low desires by a prolonged stay at that place. They called themselves '*Sankocha*' whenever inquired about their caste. From this word '*Sankocha*' originated the word '*Koch.*'[2] These Koches, therefore, are not low born. Their ancestors were *Kshatriyas*. Hirá Kochni was in her *purva-janma*[3] a *yogini* named Mádhavi. She was born of Koch parents through the curse of a Bráhmin. Hirá tried to secure me for her husband in her *purva-janma* by propitiating me by hard asceticism and constant prayer. While she was thus rapt in her devotion, there came a Bráhmin at her door who repeatedly begged unnoticed. Thereupon, the wrath of the Bráhmin was kindled. He left the house in disgust, cursing her to be born of a Koch. Hirá, now roused to her senses, fervently implored the Bráhmin to have mercy upon her. His wrath was pacified by entreaty and he departed blessing her in these words, 'Thy desire shall be fulfilled.' Thus, my love, had Mádhavi sprung from a Koch family through the curse of a Bráhmin."

It is hard to refrain from laughing as we come across the

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[1] According to the author of the *Rájopákhyána* and subsequent historians, Vishu (or Viswa) Sinha was born on the 10th Chaitra, 907 B.E., corresponding with A.D. 1502. But the date of birth of Sishu is not well known. If we are required to ascertain it, we can confidently say that Sishu was not born earlier than 909 B.E., *i.e.*, A.D. 1504. But this too is an approximate conjecture. The dates given in the *Raikut-Vansa* and other accounts are erroneous.

[2] "*Parasuráma bhayát kshatri*
Sankochát Kocha Uchyatey."
—*Yogini Tantram.*

[3] There is an endless series of heated controversy on this doctrine. *Pūrva-janma* signifies a previous life existing before the present earthly existence.

queer legendary ratiocinations in connection with Hirá and her sons. After the spread of the *Tantrik* system of worship, the celestial origin of the Koches was discovered and they were even said to be descended from *Kshartiyas*. Some slokas were invented as coming directly from the mouth of the god Siva, which gave a far-fetched construction to the meaning of the word "Kocha." But the real truth has remained unaltered. It is known that Vishu, the son of Hirá, the first of the Koch Behár Rájás, was in fact, *converted* to Hinduism.

Chandan and Madan.

The four sons of Hariyá, Chandan, Madan, Vishu and Sishu, collected an army and defeated and killed the ruler of Chikna with his followers. Madan was killed in this conflict and Chandan was proclaimed king. Then the three brothers, who survived Madan, married the three daughters of the slain chief. The *Rája Saka* of the Cooch Behár family dates from his ascension to the throne, which took place in the year 917 of the Bengali Era, that is, A.D. 1510. Chandan subjugated the petty *Bhuiyás* of Kámarupa and died in 930 B.E. (A.D. 1522) after a rule of thirteen years. Vishu succeeded him, and his brother Sishu was dubbed a *Ráikut* after his ascension to the throne.

Vishu and Sishu.

49. *On Swertia angustifolia*, Ham., *and its Allies.*—*By* I. H. Burkill.

The plants which will be discussed in the following pages are :—

1. *Swertia nervosa*, Wall.
2. *Swertia angustifolia*, Ham. (including S. pulchella., *Ham.*, S. affinis, *C. B. Clarke*, and S. vacillans, *Maxim.*).
3. *Swertia paupera*, Burkill.
4. *Swertia exacoides*, Burkill.
5. *Swertia trichotoma*, Wight.
6. *Swertia corymbosa*, Wight.
7. *Swertia zeylanica*, Walker.
8. *Swertia Lawii*, Burkill.
9. *Swertia Beddomei*, C. B. Clarke.

all species of India and China.

The paper is written to clear up a troublesome group in advance of an enumeration of all the species of Asia and a discussion regarding their distribution.

At the date (1828) of the lithographing of Wallich's invaluable Catalogue of the dried plants in the Herbarium of the East India Company, the following specimens of the affinity of *Swertia angustifolia* had been collected :—

1. Specimens collected at Narainhetty in Nepal by Dr. Francis Hamilton (afterwards Buchanan-Hamilton), and named by him *Swertia angustifolia*.
2. Specimens collected in Nepal near Khatmandoo, by Nathaniel Wallich, the Superintendent of the Company's Garden at Shibpur, in 1821 and subsequently numbered by him 4373*a*.
3. Specimens collected in Kamaon by Robert Blinkworth, an employee of Wallich, and numbered by the latter 4373*b*.
4. Specimens collected in Sirmur by Captain A. Gerard of the Company's service, who journeyed in the North-Western Himalayas from 1817 onwards surveying, and like his early companion, Dr. Govan, was a correspondent of Wallich : the last-named numbered these 4373*c*.
5. Specimens from Kamaon collected by Blinkworth for Wallich, and numbered by the latter 4373*d*, with the remark "*S. angustifolia*, var., *acutangula*, an distincta species."
6. Specimens collected in Nepal at Protappur by Hamilton. and named by him *Swertia pulchella*. Wallich having received these, numbered them 4375.
7. Specimens collected by Wallich in 1825 in woods of *Dalbergia Sissoo* in the Terai of Oudh, when he was deputed to inspect forests in Rohilkand and travelled

to Dehra Dun. These were numbered by him as 4376 with the name of "*Swertia elegans* an præcedentis, i.e., *S. pulchellæ*, varietas." The exact locality whence the plant came cannot be ascertained. Wallich's Oudh specimen of Sissoo is also not localised.

8. Specimens collected at Prome in Lower Burma by Wallich in 1826, and named by him *Swertia florida* with the number 4382*a*.
9. Specimens collected by Wallich on the hill of Taung-dong, near Mandalay, in the cold weather of 1826-27, and named by him *Swertia florida* with the number 4382*b*. Apparently Taung-dong is Taung-do, the pass up to which the road from Mandalay to Maymyo and Hsipaw goes.
10. Specimens collected by Wallich in the neighbourhood of Khatmandoo in Nepal in 1821, and named by him *Swertia nervosa* with the number 4383*a*.
11. Specimens collected by Blinkworth in Kamaon for Wallich and named by the latter *Swertia nervosa* with the number 4383*b*.
12. Specimens collected by Wight in the Nilgiri hills, communicated to Wallich who numbered them 4381 with the name *Swertia trichotoma*.

Out of these twelve the first fell into David Don's hands, because Don was Lambert's Librarian and had free access, with Hamilton's knowledge, to the duplicate specimens that Hamilton had sent to Lambert. David Don described the plant under Hamilton's name of *Swertia angustifolia* with full acknowledgment, on page 127 of his *Prodromus Floræ Nepalensis* (London, 1825). At the end of the description occurs the sentence "Swertia angustifolia, necnon S. pulchella et S. dichotoma, Linn. ? Hamilton MSS.," which seems to show that Don had not seen a type of Hamilton's S. pulchella.

In 1832 Wallich figured as "*Swertia angustifolia*, Hamilton in Don's Prodromus," a plant which I have no hesitation in saying was the plant of his own gathering in 1821 (*Plantæ Asiaticæ Rariores*, iii. London, 1832, p. 2, plate 204). This plant is the number 2 above, Wallich's 4373*a*. Wallich states that it "grows in almost all the mountains of Nepal:" meaning by Nepal the valley of Khatmandoo and below (*vide* p. 3, of the *Proposal for publishing a...Tentamen Floræ Nepalensis*).

The next specimens of historic interest are three obtained by Royle himself or through his collectors. They are to be seen in the herbarium at Saharanpur with the names on them of "Swertia porrigens, Rle.," "Swertia patens, Rle.," and "Swertia trichotoma, Rle." The sheets do not bear any information as to the precise locality whence the plants came: but the localities can be supplied from a paper by David Don on the Gentianaceæ collected by Royle, which is printed in the *Transactions of the Linnean Society*, vol. xvii., pp. 503-532. S. porrigens came from the Kheri pass,

i.e., from the top of the Siwaliks between Kheri in the Saharanpur district and Dehra Dun; S. patens came from Missouri, and so did S. trichotoma. With specimens and drawings Royle left India in 1832 and in the next year became Professor of Materia Medica and Therapeutics at King's College, London. David Don was then Librarian to the Linnean Society, and in 1835 he became Professor of Botany at King's College where Royle was. Royle had placed his Gentianaceæ in David Don's hands; and Don wrote the account just referred to, which was read before the Linnean Society on November 3rd and 17th, 1835, and published with references up to date in 1837: Don also wrote for Royle an account which appeared in the *Illustrations of the Botany...of the Himalayan Mountains* (London, 1837), pp. 276-278; before publication it was touched up by Royle; but Royle in his preface ascribes it to Don. In the same year, but certainly before the paper in the Transactions of the Linnean Society and probably before the *Illustrations*, appeared the fourth volume of George Don's *General System of Gardening and Botany* (London). Whether the *Illustrations* fell into the hands of the public first or the *General System*, it is evident that both were in the press at the same time and neither could directly influence the other. If David Don had written all three—the Gentianaceæ of the *Illustrations*, the Gentianaceæ of the *General System* as well as his own paper in the Linnean Society's Transactions—the results ought to have been consistent: but he did not. Evidently George Don took what he could from his brother David and presented it to the reader in his own way, probably to the annoyance of David, who in the Transactions quietly repudiates some of the names ascribed to him by George. Among the names published in the *General System* as David Don's and repudiated by David Don in the Transactions is *Ophelia porrigens*.

David Don had read his paper to the Linnean Society in 1835: probably it was then that George Don got the name of Ophelia porrigens and other names: and as we know that David touched up his manuscript for publication in the matter of references, so probably he touched it up in 1837 in the matter of nomenclature, and if so, he ungenerously assigned his discarded names to George.[1]

The paper that resulted from David Don's studies was at any rate a good and careful one, and he had rightly recognised that none of Royle's three names were called for; that Swertia porrigens is Swertia pulchella; that Swertia patens is also pulchella; and that Swertia trichotoma (Royle, not of Wall.) is Swertia angustifolia, Ham. The adjective porrigens is such an unusual one that I wondered who had used it first: I see that it was Royle; and that the two names 'porrigens' and 'patens,' *i.e.*, 'reaching forward' and 'spreading' were evidently given in antithesis to each other.

David Don's new genera were taken up in George Don's

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[1] The other names are *Ophelia ciliata*, *O. teres*, *Ericala carinata*, *E. coronata* and *E. procumbens*. I suspect that all these were removed from the manuscript between the date of its reading and of its printing.

General System; and we find the name *Ophelia angustifolia*, D. Don, standing for *Swertia angustifolia*, Ham.; *Ophelia florida*, D. Don, standing for *Swertia florida*, Wall.; and *Agathodes nervosa*, D. Don, for *Swertia nervosa*, Wall.: but we do not get Ophelia pulchella for *Swertia pulchella*, Ham., but *Ophelia porrigens*, D. Don. The species *S. nervosa* and *S. florida* had not been described before: the names had stood as *nomina nuda* in Wallich's catalogue. Ophelia angustifolia is founded on the specimens of Wallich's collection numbers 1, 2, 3 and 4 above; Ophelia porrigens on specimens numbers 6 and 7; Ophelia florida on numbers 8 and 9; and Agathodes nervosa on numbers 10 and 11. Number 5 and 12 seem to have been overlooked.

In the Transactions of the Linnean Society, David Don bases his *Ophelia angustifolia* on the whole of the specimens so named by Wallich, *i.e.*, on numbers 1, 2, 3, 4 and 5: and his *Ophelia pulchella* on number 6. He adds an *Ophelia pulchella*, var., *minor*—a combination of number 7 above with the specimen collected by Royle and named in MS. Swertia patens. I am inclined to regard Royle's plant as not varietally identical with Wallich's, but the difference between the two is very little. The specimens of Wallich's collection numbered 8, 9, 10, 11 and 12 above, are not referred to in the paper in the Transactions of the Linnean Society.

In 1839 Grisebach published his *Genera et Species Gentianacearum* (Stuttgart), and revised it in 1845 in De Candolle's *Prodromus*, Vol. ix. (Paris). Grisebach, like David Don, regards Ophelia as a distinct genus; and he names all the plants as in the table opposite. Swertia angustifolia, S. pulchella, S. florida and S. nervosa becoming Ophelia angustifolia, O. pulchella, O. florida and O. nervosa: Ophelia pulchella var., minor, has become *O. pulchella*, **var.**, ***pumila.***

Type No.	D. Don's Prod. Fl. Nep.	Wall. Cat.	G. Don's System.	D. Don in Trans. Linn. Soc. xvii.	Grisebach in DC. Prod.	C. B. Clarke in Hook. Flora.	Here adopted.
1	S. angustifolia.	...	O. angustifolia.	O. angustifolia.	O. angustifolia.	S. angustifolia.	S. angustifolia, var., hamiltoniana.
2	...	S. angustifolia.	Ditto	Ditto	Ditto	Ditto	S. angustifolia, var., wallichiana.
3	...	Ditto	Ditto	Ditto	Ditto	Ditto	S. angustifolia, var., hamiltoniana.
4	...	Ditto	Ditto	Ditto	...	Ditto	Ditto
5	...	S. angustifolia, var., acutangula.	...	Ditto	...	Ditto	Ditto
6	...	S. pulchella.	O. porrigens.	O. pulchella.	O. pulchella.	S. pulchella.	S. angustifolia, var., pulchella.
7	...	S. elegans.	Ditto, var.	O. pulchella, var., minor.	O. pulchella, var., pumila.	S. pulchella, var., elegans.	S. angustifolia, var., elegans.
8	...	S. florida.	O. florida.	...	O. florida.	Ditto	S. angustifolia, var., florida.
9	...	Ditto	Ditto	...	Ditto	Ditto	S. angustifolia, var., pulchella.
10	...	S. nervosa.	Agathodes nervosa.	...	O. nervosa.	S. nervosa.	S. nervosa.
11	...	Ditto	Ditto	...	...	Ditto	Ditto
12	...	S. trichotoma.	...	...	...	S. trichotoma.	S. trichotoma.

Three of the Wallichian specimens are not referred to by Grisebach. He also described *Ophelia zeylanica* from Ceylon, specimens of which had been collected by Colonel James T. Walker who was in Ceylon from 1830 to 1840, and *Ophelia corymbosa*, with a variety *elatior*, from specimens collected in the Nilgiri Hills by Wight and the French naturalist and traveller, Perrottet. I am unfortunately unable here to say anything about Ophelia corymbosa, var., elatior, the type of which I have not seen.

A year later than Grisebach's second work, Edgeworth of the Bengal Civil Service published in the *Tran actions of the Linnean Society*, xx., p. 85, a description of a new plant which he called *Ophelia pratensis* and had got from the Sub-Siwalik tracts, not far from Saharanpur, a plant with a yellowish flower, short acute sepals and scales over the nectary scarcely ciliate-lacerate. The type is at the herbarium of the Royal Botanic Gardens, Kew, and it is just Swertia pulchella with, if Edgeworth did not make a mistake, a yellow flower instead of a lilac one.

Over the years before 1850 Wight had been busy in the south of India collecting material which chiefly saw the day in two works—his *Illustrations of Indian Botany* (Glasgow, 1850), and his *Icones Plantarum Indiæ Orientalis* (Madras, 1840–1853). Volume iv. of the Icones bears the same date as the Illustrations, Volume ii., with which we are here concerned. In these two works Wight, with Arnott as co-author in the second, gave seven new names to plants of the group with which we are dealing, one being Swertia trichotoma, Wall., converted into Ophelia trichotoma, and another, the Ophelia corymbosa described by Grisebach.

In the "Icones" Volume IV.	In the "Illustrations" Volume II.
Plate 1329, *O. corymbosa*, Wight *ex* Griseb.	Plate 157, 3*a*, *O. umbellata*.
Plate 1330, *O. griesbachiana*.	,, ,, 3*b*, *O. affinis*.
,, 1331, *O. elegans* (not of Wallich).	,, ,, 3*g*, *O. trichotoma*.
	,, ,, 3*c*. *O. Lawii*.

In the *Icones* he described fully the plants figured: in the *Illustrations* the plants are only figured to show particular points in their structure, and are not described, nor is there any information given as to their origin. The origin of *Ophelia Lawii* was given in the next year, 1851, by Dalzell in *Hooker's Kew Journal of Botany*, iii., p. 211, with a description, as the Sahyadri range, *i.e.*, the highest part of the Western Ghats between Belgaum and Sawantwadi. *Ophelia umbellata*, *Ophelia affinis* and *Ophelia trichotoma*, Wight and Arnott (Swertia trichotoma, *Wall.*, but not of *Royle*), went for a time undescribed: nothing but their petals and stamens having been figured in the Illustrations.

In 1850 in the Botanical Magazine, plate 4489, Sir William Hooker figured *Ophelia corymbosa* with its corymbose inflorescence and its lilac flower, quite a characteristic, but weak plant: Dr. Bernard Schmid had sent the seeds from the Nilgiri Hills to Kew,

where the plant was raised. In 1863 in the same Journal—a volume dedicated to Wight—Sir William Hooker figured on plate 5397 as *Ophelia umbellata* a plant with a pale-blue veined flower and a lax inflorescence. In 1868 Sir Joseph Hooker figured on plate 5687, as fig. 3 of the plate, a lilac flowered plant received by him from Mr. I. Anderson Henry of Edinburgh—a keen grower of plants from seeds that he received from relations in the North-Western Himalaya and from friends who visited Sikkim. The first of these plants is undoubtedly the same species as Wight's *Ophelia corymbosa*. The second exactly matches Wight's type. The third I consider the same variety of *Swertia angustifolia* as is Hamilton's plant.

Wight's Icones are not coloured: but in the attached descriptions of the species he says that the flower of *Ophelia corymbosa* is "blue" and that the flower of *Ophelia elegans* is "light blue." By blue he means lilac in regard to *Ophelia corymbosa*, and we have seen that Sir Joseph Hooker figures it as lilac: by light blue did he mean pale lilac, or such a pale blue (white with blue veins) as is given to *S. trichotoma* in the plate of the Botanical Magazine? In the Illustrations the same lilac wash is put on the petals of *Ophelia affinis*, *Laurii*, *purpurascens*, *dalhousiana*, *alba*, *trichotoma* and *cordata*. Some of these species cannot have been figured by Wight and Arnott from life, and it is very questionable how much reliance should be placed upon their colours. Herewith a summary of them:—

Ophelia corymbosa, said by Wight to be blue-flowered, figured undoubtedly correctly in the Botanical Magazine as lilac.
O. griesbachiana, colour not stated by Wight.
O. elegans, said by Wight to be pale blue.
O. umbellata, figured by Wight as very pale lilac; by Sir William Hooker as white with blue veins and a blue flush.
O. affinis, figured by Wight as lilac.
O. trichotoma, figured by Wight as lilac.
O. Laurii, figured by Wight as lilac; described by Dalzell as white.

South Indian Swertias (Ophelia).

Figure.	Name under which published.	In Flora British India.	Here adopted.
Wight's Illustr., 157, 3*p*.	O. affinis.	S. affinis.	S. angustifolia var. pulchella.
Wight's Icones, 1331	O. elegans.	Ditto	Ditto.
Wight's Illustr., 157, 3*g*.	O. trichotoma.	S. trichotoma.	S. trichotoma.
Wight's Illustr., 157, 3*a*.	O. umbellata.	Ditto.	Ditto.
Curtis' Bot. Mag., 5397	O. umbellata.	Ditto.	Ditto.
Wight's Icones, 1329	O. corymbosa.	S. corymbosa.	S. corymbosa.
Curtis' Bot. Mag., 4489	O. corymbosa.	Ditto.	Ditto.
Wight's Icones. 1330	O. grisebachiana.	S. corymbosa var. griesbachiana.	S. corymbosa var. griesbachiana.
Wight's Illustr., 157, 3*c*.	O. Lawii.	S. corymbosa var. Lawii.	S. Lawii.

Last of all in 1883 we come to Mr. C. B. Clarke's account of the Gentianaceae in Sir Joseph Hooker's *Flora of British India* (London). Therein the genus Ophelia is reduced again, and becomes a section of Swertia. The Wallichian types have their names restored to them, except S. elegans and S. florida which become *S. pulchella*, var., *elegans*: Swertia pratensis is reduced to S. pulchella. The Wightian types are recognised as being too many, and they are reduced as in the above table, column 3. The species surviving, together with a hitherto unrecognised species from Southern India, *S. Beddomei*, are:—

S. nervosa, Wall.
S. angustifolia, Ham.
S. pulchella, Ham.,
  var. *elegans*, C. B. Clarke.
S. affinis, C. B. Clarke.
S. Beddomei, C. B. Clarke.
S. corymbosa, Wight,
  var. *elatior*, Griseb.
  var. *grisebachiana*, C. B. Clarke,
  var. *Lawii*, C. B. Clarke.
S. trichotoma, Wall.
S. zeylanica, Walker.

There is nothing historical to chronicle from India since the date of Mr. Clarke's contribution, except that Sir Henry Collett

(*Flora Simlensis*) 1902, p. 327, published the information, recorded before him on the collecting tickets of several collectors, that the flower of Swertia angustifolia varies to white from its usual lilac; and that Dr. T. Cooke has fully redescribed *Ophelia Lawii* under the name adopted in the Flora of British India of *S. corymbosa*, var., *Lawii* (Flora of the Presidency of Bombay, ii., 1904, p. 194). He states the petals to be white with blue veins, meaning undoubtedly lilac veins: this is just as I have myself found it.

The first specimens of the group found in China were described by Hance as *Ophelia vacillans* in the *Annales des Sciences Naturelles*, Ser. 5, v. (1866), p. 229. Maximowicz, commenting on a Swertia of Northern China, referred to Hance's plant as *Swertia vacillans* in the *Mélanges Biologiques* of the St. Petersburg Academy. xi., p. 269. Hance, later, having received more specimens which he wished to cite (*Journal of Botany*, 1885, p. 326) adopted Maximowicz's name, which persists in Forbes and Hemsley's Index Florae Sinensis in the *Journal of the Linnean Society*, xxvi., 1890, p. 141. But the plant does not differ from S. pulchella (S. angustifolia, var., pulchella).

Recently, partly because I have been working at the origin of the Gentianaceous bitters of India, I have examined all the specimens of Swertia that I could lay hands on. I have examined the collections at Kew, at the Natural History Museum, South Kensington, at Cambridge, England, at the Jardin des Plantes, Paris, at the Royal Botanic Gardens, Shibpur, at Saharanpur, and at the Indian Museum, Calcutta, while Mr. C. A. Barber most kindly has sent to me his collection from Madras and Mr. J. C. Willis his from Peradeniya, Ceylon. The result of critically turning over so much material is a very slight modification of the scheme of Mr. Clarke, which amounts to—

1. *S. pulchella* with *S. affinis*, to be a variety of *S. angustifolia*, Ham.
2. The addition of two new species from the Shan plateau.
3. *S. corymbosa*, var., *Lawii*, to be maintained as a distinct species.

I have followed Mr. Clarke in reducing the Wightian species, but they need some further study. Wight undoubtedly made species on inadequate differences, so that his *O. grisebachiana* is certainly no more than a variety of *S. corymbosa*: his *O. trichotoma* in the dry state can in no way be distinguished from his *O. umbellata*; alive it may have differed in the colour of the flower: and his *O. elegans* is a sub-variety or form of *S. angustifolia*, var., *pulchella*, which we know varies to white.

Key to the Species and Varieties.

Species of Northern India and Burma, S. angustifolia, *var.*, pulchella, *extending through the east of the Deccan to the very South.*

Leaves elliptic, often narrowly so; sepals long and lanceolate ... ... *S. nervosa.*
Leaves linear-lanceolate ... ... *S. angustifolia*

Sepals exceeding the petals or equalling them.	
Inflorescence lax; sepals linear-lanceolate. very conspicuous	var. *wallichiana.*
Inflorescence a flat corymb; sepals equalling petals	var. *florida.*
Inflorescence rather strict; sepals equalling or just longer than the petals ...	var. *hamiltoniana.*
Sepals shorter than the petals.	
Plant a foot high, more or less ...	var. *pulchella.*
Plant dwarf	var. *elegans.*
Leaves linear, almost needle-shaped, only one line broad; sepals short; flowers few ...	*S. paupera.*
Leaves ovate, obtuse; sepals short; inflorescence subcorymbose	*S. exacoides.*

Species of Southern India.

Inflorescence elongated, paniculate; leaves herbaceous.	
Petals obtuse or mucronate; branches of the inflorescence relatively short and very often horizontal; leaves lanceolate or linear-lanceolate	*S. angustifolia.* var. *pulchella.*
Petals subacuminate; branches of inflorescence longer, sharply ascending; leaves ovate	*S. trichotoma.*
Inflorescence corymbose; leaves slightly firmer.	
Inflorescence dense; pedicels short; petals subacuminate; leaves narrowed into a stalk below, often folding on themselves when dry.	
Plant robust; leaves rather broad.	
Leaves elliptic or almost spathulate; corolla-lobes elliptic-obovate ...	*S. corymbosa,* type.
Leaves ovate-lanceolate, shortly acuminate; corolla-lobes elliptic-obovate	*S. corymbosa,* var. *elata.*
Plant less robust; leaves narrower than in the type	*S. corymbosa,* var. *griesbachiana.*
Plant as robust as the last but leaves still narrower	*S. zeylanica.*
Inflorescence dense; pedicels short, petals only mucronate, leaves broadly ovate-sessile, rounded at both ends, or very obtuse above	*S. Beddomei.*
Inflorescence lax; pedicels ½ inch long; petals mucronate; leaves deltoid-ovate, rounded at the base and not stalked	*S. Lawii.*

Enumeration and Distribution.

[A note of exclamation (!) means that the specimen has been examined.]

Swertia nervosa, Wallich, Cat. (1828) No. 4383, nomen nudum: Griesbach, Genera et Species Gent., (1839), p. 317 and in DC., Prodromus, ix. (1845), p. 125: C. B. Clarke in Hooker f.,

Flora Brit. India, iv. (1883), p. 125: C. B. Clarke in Journ. Linn. Soc. Bot. xxv. (1889), p. 48: *Franchet in* Bull. de la Soc., Bot. de France, xlvi. (1899), p. 315: Smith and Smith, Simla Flowers (1899), p. 40.

South China.—Province of Kweichou. Near Kweiyang on the hill of the college and on the banks of the river (Bodinier, 1960!).

South-Western China.—Province of Yunnan. Yunnansen, on the edge of rice cultivation (Ducloux. 35! 500!); fields at Mo-so-yn (Delavay, 1234! 2935!).

Eastern Himalaya.—Native Sikkim. Lachung valley at 9000 feet (Hooker!); Hi, south-west of Pemionchi, at 4000 feet (C. B. Clarke, 13037!); Kulhait valley, in the same neighbourhood at 5000 feet (C. B. Clarke, 25525!). Darjeeling district. Darjeeling, 7000—7800 feet (C. B. Clarke, 12555! 26265! Gamble! Prain's collector!); Birch hill, at Darjeeling, 7000 feet (King, 5104!); Senchal, above Darjeeling at 8000 feet (Gamble, 8451!).

Nepal Himalaya.—Eastern Nepal. Valley of the Yangma, a tributary of the Tambur near the Sikkim frontier. (Hooker!); Tambur valley (Hooker!). Central Nepal. Near Khatmandu (Wallich 4383*a*!).

North-Western Himalaya.—Without precise locality (Royle!), Kamaon. Without precise locality (Blinkworth in Herb. Wallich 4383*b*! 4383*d*!). Simla Hill States. Naldera near Simla (Smith).

Khasi-Naga Hills.—Naga hills. Kegwima at 5800 feet (C. B. Clarke, 41181!); Thesama (Prain!); Kohima at 5300 ft. (C. B. Clarke, 41135!).

Swertia angustifolia, Hamilton ex D. Don, Prodromus Floræ Nepalensis, (1825), p. 127: Wallich, Cat. (1828), No. 4373, and in Plantæ Asiaticæ Rariores, iii. (1832), p. 2, plate 204: C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 125: Forbes and Hemsley in Journ. Linn. Soc. Bot., xxvi. (1890), p. 138: Knoblauch in Bot. Centralblatt, lx. (1894), p. 395: Smith and Smith, Simla Flowers, (1899), p. 40. *Swertia elegans*, Wallich, Cat. (1824), No. 4376, nomen nudum, not of Wight. *Swertia florida*, Wallich, Cat. (1828), No. 4382, nomen nudum. *Swertia pulchella*, Hamilton ex D. Don, Prodromus Floræ Nepalensis, (1825), p 127, nomen mudum: Wallich, Cat. (1828), No. 4375 nomen nudum: C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 125, and in Journ. Linn. Soc. Bot. xxv. (1889), p. 48: Forbes and Hemsley in Journ. Linn. Soc. Bot. xxvi. (1890), p. 140: Wood in Records Bot. Survey India, ii. (1902), p. 118. *Swertia racillans*, Maximowicz in Mélanges Biol. de l'Acad. de St. Petersh. xi. (1881), p. 269: Hance in Journ. Bot. 1885, p. 326: Forbes and Hemsley in Journ. Linn. Soc. Bot. xxvi. (1890), p. 141: Franchet in Bull. de la Soc. Bot. de France, xlvi. (1899), p. 320. *Swertia*

affinis, C. B. Clarke in Hooker f., Flora Brit. India iv. (1883), p. 126: Knoblauch in Bot. Centralblatt, lx. (1894), p. 395: Wood in Records Bot. Survey India, ii. (1902), p. 118. *Swertia* sp. Griffith, Journals (1847), p. 302, and Itin. Notes ii. (1848), p. 59, No. 912. *Ophelia angustifolia*, D. Don ex G. Don, General System of Gardening and Botany, iv. (1837), p. 178, and in Trans. Linn. Soc. xvii. (1837), p 524: Grisebach, Genera et Species Gent. (1839), p. 320 and in DC, Prodromus, ix. (1845), p. 126: Hooker f. in Bot. Mag. (1868), plate 5687, figs. 3 and 4. *Ophelia florida*, D. Don ex G. Don, General System of Gardening and Botany, iv. (1837), p. 178: Grisebach in DC., Prodromus, ix. (1845), p. 125. *Ophelia porrigens*, D. Don ex G. Don, General System of Gardening and Botany, iv. (1837), p. 178. *Ophelia pulchella*, D. Don in Trans. Linn. Soc. xvii. (1837), p. 524: Grisebach, Genera et Species Gent. (1839), p. 318 and in DC., Prodromus, ix. (1845), p. 126: Franchet, Plantæ Davidianæ, i. (1884), p. 213. *Ophelia pratensis*, Edgeworth in Trans. Linn. Soc. xx. (1846), p. 86. *Ophelia affinis*, Wight and Arnott, Illustrations of Indian Bot. ii. (1850), p. 175, plate 157 bis, fig. 3*b*, nomen nudum. *Ophelia elegans*, Wight, Icones Plant. Indiæ Orient. iv. (1850), p. 8, plate 1331, not intended to be *S. elegans*, Wall. *Ophelia vacillans*, Hance in Ann. des Sciences Nat., 5me Ser., v. (1866), p. 229.

var. wallichiana, Burkill. (S. angustifolia *Wall.* Cat. in part, and Plant. Asiaticæ Rariores).

Eastern Himalaya.—Sikkim without precise locality (Hooker!). Native Sikkim. North of the Ranjit river at 2000 ft. (C. B. Clarke, 9461!); Valley of the Rumman at 2500 ft. (C. B. Clarke 24921! T. Thomson!). Darjeeling district. Ranjit valley at 1500 ft. (King!). Between Samombong and Richi, 2000—4000 ft. (Anderson, 819!); Samombong at 4000 ft. (C. B. Clarke, 12640!); Namchi (King!).

Nepal Himalaya.—Central Nepal. Near Khatmandu (Wallich, 4373*b*!).

var. *florida*, Burkill (S. florida, *wall*).

Central Burma.—District of Yamethin or Meiktila. Kyundon, in the plains (Collett!). District of Prome. Prome hills (Wallich, 4382*a*!).

var., hamiltoniana, Burkill (S. angustifolia, *Ham.*).

South-Western China.—Province of Yunnan. At Yunnan-fu (Ducloux, 315!); Meng-tze, on the mountains to the south-east (Henry, 9329 A.).

Southern China.—Province of Kwang-tung. Near Kanyam-ngam, on hills on the North river (Sampson!); near Tingushan (Sampson); Pak-wan-shan or White-cloud mountains (Hance, 7561!). Island of Hainan. Nam-fung (B. C. Henry!)

Province of Kwei-chou. Near Gan-pin on hills in grass (Martin and Bodinier!); near Hoang-ko-chan in the subprefecture of Tchen-lin (Seguin and Bodinier!).

Eastern Himalaya.—Darjeeling district. Darjeeling (Griffith, 5832 K. D!).

Nepal Himalaya.—Central Nepal. Narainhetty (Hamilton!). Western Nepal. Near the Kosi river (Winterbottom!).

North-Western Himalaya.—Without precise locality (Falconer! Parish!). Almora district. Kamaon without precise locality (Blinkworth in Herb. Wallich 4373*b* and *d*). Gori valley at Mathkot (Duthie, 2405!); near Suring at the head of the Sarju valley at 4000 ft. (Strachey and Winterbottom!); Hawalbagh near Almora (Jamieson, 547!); Almora at 5500 ft. (Strachey and Winterbottom!); Bunasur, 3000—5000 ft. (Edgeworth, 96!); Girgaon in the Manda Kini valley at 6000 ft. (Strachey and Winterbottom!); Valley of the Ramganga at 3000 ft (Strachey and Winterbottom!). Nainital district. Nainital (Meebold!) Road to Kaladhungi from Nainital (Davidson!). State of Tehri-Garhwal. Aglar valley north of Missouri (Duthie, 852); ridge between Nandgaon and Silkiara, 6000—7000 ft. (Duthie, 465!); Churani! (Gammie!). District of Dehra Dun. Missouri (Royle! Jamieson, 461! King! Duthie, 1831); Rajpur (Meebold!); Dehra Dun (Duthie, 23021!); in Jaunsar at Danich, 5000 ft. (Gamble, 27268!). State of Bashahr. Between Pasada and Rampur in the Sutlej valley, 3000—5000 ft. (Lace, 1087!). Simla Hill States. In the State of Sirmur (Gerard in Herb. Wallich, 4373*c*!); Shali mountain north-east of Simla, 6000 ft. (Collett, 319!); Simla (Lady Dalhousie!); on Jakko, by Simla (without collector's name!); near Thodaghon in the Patiala State (without collector's name, 25!). Chamba State. Sihunta over the Kangra valley, at 4000 ft. (C. B. Clarke, 23643!). Kashmir. On the banks of the Chenab, probably in Jamu (T. Thomson!). "Gulmarg, Jhelum valley and below Māri" (Aitchison!); Dulai, in the Jhelam valley (Meebold!). Rawal Pindi District." "Gulmarg, Jhelum valley and below Māri" (Aitchison!). Hazara district. Without precise locality (Falconer's collectors!).

Khasi-Naga Hills.—Khasia hills. Without precise locality (Simons!).

Plains of Upper India.—State of Kuch Behar. On a chur (Griffth!).

Plains of Assam.—Sibsagar district. Shikarighat, 250 ft. (C. B. Clarke, 38066!).

Lower Burma ?—"Tenasserim and Andamans" (Hb. Helfer 5828 K.D.!).

var., *pulchella*, Burkill (S. pulchella, *Ham.*, S. vacillans, Hance, and S. affinis, *C. B. Clarke*).

Central China.—Province of Kiangtsi. Kiu-kiang (David). Province of Hupeh. Ichang (Henry, 42! 527! 2243! 4343!).

Southern China.—Province of Kwei-chou. Near Gan-pin on Hills in grass (Martin and Bodinier, 1810!). Island of Hai-nan. Tong-lang-mun (Ford's collector, 423!).

South-Western China.—Province of Yunnan. Near Yunnan-fu on the mountains (Ducloux, 350!); Ta-oung-miao on the road between Houang-kia-pin and Ta-li-fu at 4500 ft. (Delavay, 1239!); Meng-tze (Tanant!); on grassy moutains near Meng-tze at 6000 ft (Henry, 9329!); Szemao on the hills to the west at 5000 ft. (Henry, 12449!).

Eastern Himalaya.—Sikkim, probably British Sikkim, *i.e.*, the Darjeeling district, but without precise locality (Hooker!).

Nepal Himalaya.—Eastern Nepal. Guhera river (Hooker!). Central Nepal. Without precise locality (Maries!); Protappur (Hamilton in Herb. Wallich, 4375*a*!).

North-Western Himalaya.—Without precise locality (Falconer!). District of Almora. Chipla between the Kali and Gori valley (Ramsukh, 7998!); Lohaghat (Arnott); Hawalbagh (Jamieson, 547!); Ganges valley between Moneri and Barabatti 4000-500 ft. (Duthie, 1825!); Barahat (Edgeworth, 96!); District of Dehra Dun. Missouri (Royle!); Dholkot Forest near Dehra Dun (Gamble, 27433!). Kheri pass, on the Siwaliks (Royle!); State of Tehri-Garhwal. Bok hill near Missouri at 10000 ft. (Duthie, 850!); in the Ganges valley (Duthie's collector, 1189!). Simla Hill States. Without precise locality (Strachey and Winterbottom!). State of Mandi. Mandi (Edgeworth!). State of Chamba. Sihunta over the Kangra Valley at 4000 ft. (C. B. Clarke, 23643!); Kangra district. Dalhousie (Dr. Clark!).

Plains of Northern India.—District of Saharanpur. Sub-Siwalik tract (Edgeworth, 97!). District of Darjeeling. Naksabari (Gamble, 326!) between Kuprail and Siliguri in high grass (Kurz!); District of Jalpaiguri. Siliguri at 500 ft. (C. B. Clarke, 26563!); between Siliguri and Titalya in grass land (Kurz!); between Titalya and Dunknadi in long grass (Kurz!).

Khasi-Naga Hills.—Khasi hills, without precise locality (Simons! Mann 267! Lobb! Herb. Kurz! Hooker and Thomson!) Gyreng (Griffith!); Mambri, between Surarim and Nunklow (Wallich!); Nunklow (Griffith, 5827, K. D!); above Nunklow (Griffith, 125!); road to Nunklow from Surarim (Wallich!); Mairang at 4500 ft. (C. B. Clarke, 16113!); Kollong Hill, south-west of Mairang (Hooker and Thomson!); Shillong 5000–6000 ft. (C. B. Clarke, 18631! 43532!); Suneassa valley below Syong (Griffith 912!); Syong (Hooker and Thomson!); Kalapani at 4500 ft. (C. B. Clarke, 16372!); Pomrang (Hooker and Thomson!). Jaintia Hills. Nartiang at 4000 ft. (C. B. Clarke, 14554!). Naga hills. Kohima at 4000 ft. (C. B. Clarke, 40920! Prain!); Thesama (Prain!). State of Manipur. Manipur, at 3000 ft. (Watt, 7361!).

Chutia Nagpur Plateau.—Without precise locality (Schlich!). Hazaribagh district. Potaro river (Prain!); Rajabera, Sarunda (Gamble, 9120). Palamow district. Seemah Res at 2000 ft. (Gamble, 8835!). Manbhum. Koelapal in open spots in

jungle (Ball !). Singbhum. Without precise locality (Haines, 332 !) ; Noada at 1500 ft. (C. B. Clarke, 43253 !).

Hills of the Centre of the Deccan.—Jabalpur district. Common by the river at Jabalpur (Beddome !).

Eastern Ghats.—Ganjam district. On the hill of Mahendragiri (Fischer and Gage !) ; between Tickapalli and Linepada (Barber, 1221 !). District of Vizagapatam. Hills west of Vizagapatam (Wight !). Godavery district. Suhmamri hill (Gamble, 15959 !). District of Karnul. Karnul hills (Beddome !) ; Nallamala hills near Karnul (Beddome !).

Hills of Southern India.—Nilgiri district. Without precise locality (Wight ! G. Thomson ! Lawson !) ; Mudumalai at 2000 ft. (Gamble, 17872 !) ; Tippucardu (Lawson !) ; Kotakambi at 5000 ft. and at 6000 ft. (Gamble, 16763 ! 16786 ! 5394 !). District of Coimbatore. Anamalai hills (Beddome, 5388 !) ; Poonachi in the Anamalai hills (Barber, 3771 !). District of Malabar. Palghat (Beddome, 44 ! 48 !) ; Anamalai hills (Beddome, 5397 !). District of Madura. Pulney hills (Wight, 1839 ! Beddome, 45 ! 5385 ! 5395 ! 5396 ! Bourne, 282 !) ; Siramalai hills, near Madura (Wight !). State of Travancore on the high range, but without precise locality (Beddome ! Bourdillon, 21 !).

Central Burma.—District of Yamethin. Yin-daw (Abdul Khalil !).

Shan Plateau.—District of Mandalay. Taung-Dong or Taung-do pass on the road to Maymyo (Wallich, 4382*b* !) ; Maymyo (Badal Khan, 266 !). Southern Shan States. State of Maw, at Sa-ywa (Abdul Khalil !) : State of Lai-hka or Le-gya. at Laihka (Abdul Khalil !) : State of Yawng-hwe, at Fort Stedman or Taung-gyi at 5000 feet (Collett, 35 ! Abdul Khalil !). District of Toungu. Hill of Nat-taung (Cross, 46 !) ; on the summit of Nat-taung (Kurz, 216 !).

var. elegans, C. B. Clarke (S. elegans, Wall.).

Plains of Northern India.—Old Kingdom of Oudh, exact locality unknown, but in the Terai (Wallich, 4376 !). District of Kheri. Kheri (Inayat, 22315 !) ; jungles of Kheri (T. Thomson !).

Swertia paupera, Burkill in Journ. Asiatic Soc. Bengal, 1906, p. 222.

Shan Plateau.—District of Mandalay. Maymyo (Badal Khan, 281 !).

Swertia exacoides, Burkill in Journ. Asiatic Soc. Bengal, 1906, p. 321.

SHAN PLATEAU.—Southern Shan States. State of Yawnghwe, at Fort Stedman (Abdul Huk!).

SWERTIA TRICHOTOMA, Wallich, Cat. (1828), No. 4381, nomen nudum: C. B. Clarke in Hooker f., Flora Brit. India iv. (1883), p. 126. *Ophelia trichotoma*, Wight and Arnott in Wight, Illustrations Indian Bot. ii (1850), p. 175, plate 157 bis, fig. 3*g*. *Ophelia umbellata*, Wight, Illustrations Indian Bot. ii. (1850), p. 175, plate 157 bis, fig. 3*a*: Hooker in Bot. Mag., (1863), plate 5397.

HILLS OF SOUTHERN INDIA.—Nilgiri district. Nilgiri hills without more precise locality (Foulkes! Wight, 1842 K. D.! Gardner! Balcock! Schmid! G. Thomson! Lawson!); Utakamand or Ootacamund, 7000–7500 feet (C. B. Clarke, 10675! 10680! Gamble 18481!); Aranby at 7500 ft. (Gamble, 15715!).

SWERTIA CORYMBOSA, Wight ex Griseb. in DC. Prod. ix. (1845), p. 125; C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 126: Knoblauch in Bot. Centralblatt, lx. (1894), p. 394. *Ophelia corymbo a* Grisebach, Genera et Species Gent. (1839), p. 317 and in DC., Prodromus, ix. (1845), p. 125: Wight, Icones Plantarum India Orient. iv. (1850), part 2, p. 8, plate 1329, and Spicilegium ii. (1851), p. 58, plate 165: Hooker in Bot. Mag. (1850), plate 4489. *Ophelia griesbachiana*, Wight, Icones Plantarum India Orient. iv. (1850), part 2, p. 8, plate 1330.

HILLS OF SOUTHERN INDIA.—State of Mysore. Bababuden hills in the Kadur district (Talbot, 2402!). State of Kurg. Without precise locality (Cameron!); Brahmagiri hills at 5000 feet (Beddome, 5398!). Nilgiri district. Without precise locality (Wight! Honenacker! Gardner! Schmid! Gough! Herb Dalzell! G. Bidie!); Paikaré or Poycara (Wight!); Utakamund or Ootacamund at 7000–7500 feet (Foulkes! King! Anderson! Lawson! C. B. Clarke, 10650! 10675! Gamble, 18482!); Dodabetta at 8000 feet (Lawson; Gamble, 11539! 12991!); Aranby at 7500 feet (Gamble, 15714!); Rallia at 7000 feet (Gamble, 13132!); Kotagiri (Adam!); Mayaburam (Adam!). District of Malabar. Mamale on the Nelambur river (King!). District of Coimbatore. Bolampatti (Wight!); Kunur or Coonoor (Lawson!).

var., GRIESBACHIANA, C. B. Clarke in Hooker f., Flora Brit. India iv. (1883), p. 126; *Ophelia griesbachiana*, Wight.

HILLS OF SOUTHERN INDIA.—District of Malabar. Anamalai hills without more precise locality (Beddome, 5389!).

District of Madura. Pulney hills (Wight! Bourne, 310!). Kodaikanal (Barber 7242!).

var., ELATIOR, Grisebach in DC., Prodromus, ix (1845), p. 125.

HILLS OF SOUTHERN INDIA.—Nilgiri district (Perrottet).

SWERTIA ZEYLANICA, Walker ex Grisebach, in DC., Prodromus, ix. (1845), p. 124: Thwaites, Enumeratio Plant. Zeylan. (1864), p. 205: C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 127: Trimen, Handbook Flora Ceylon, iii. (1895), p. 187: Pearson in Journ. Linn. Soc. Bot., xxxiv. (1899), p. 350; Parkin and Pearson in Journ. Linn. Soc. Bot. xxxvi. (1903), pp. 437, 451. *Ophelia zeylanica*, Grisebach, Genera et Species Gent. (1839), p. 316 and in DC., Prodromus, ix. (1845), p. 124: Thwaites, Enumeratio Plant. Zeylan. (1864), p. 205.

CEYLON.—Central Province. Without precise locality, 6000—7000 ft. (Walker, 651! Maxwell! Gardner, 592! Thwaites!); Hakgala at 5600 ft. (Pearson, 727!); Sita Eliya at 5800 ft. (Pearson, 231!); Moon plains near Newara Eliya at 6000 ft (Pearson, 546!); Newara Eliya at 6000 ft. (Thwaites! G. Thomson!).

SWERTIA BEDDOMEI, C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 127.

HILLS OF SOUTHERN INDIA.—District of South Kanara. Without precise locality (Beddome!). State of Mysore. Without precise locality (Lobb!). State of Kurg. Brahmagiri hills (Beddome, 5392!); Nilgiri District. Sispara ghat (Beddome, 5390! 5391! 13439!); District of Tinnevelli. Tinnevelli Hills (Beddome!); State of Travancore. Without precise locality (Beddome 5393!).

SWERTIA, LAWII Burkill.—*Swertia corymbosa*, var., *Lawii* C. B. Clarke in Hooker f., Flora Brit. India, iv. (1883), p. 126: Woodrow in Journ. Bombay Nat. Hist. Soc., xii. (1900), p. 169: T. Cooke, Flora Presidency Bombay, ii. (1904), p. 194. *Ophelia Lawii*, Wight and Arnott, Illustrations Indian Botany, ii. (1850), p. 175, plate 157 bis, fig. 3 *c.*, nomen nudum. *Ophelia pauciflora*, Dalzell in Hooker's Kew Journ. Bot., iii. (1851), p. 211: Dalzell and Gibson, Bombay Flora (1861), p. 156.

WESTERN GHATS.—District of Belgaum. Sahyadri ghats without more precise locality (Dalzell!); Belgaum (Dalzell! Ritchie! Burkill, 16875!). District of North Kanara.

Sambrani (Talbot, 1333!); Castlerock (Bhiva! Woodrow!); Haliyal (Woodrow!).

The use of the above named plants as medicinal Chiretta is, in the north of India, not very wide: but they appear to be more commonly resorted to in the Deccan, where the true Chiretta is not to be found in the jungles Over the Chutia Nag pur plateau and the Circars no other Swertia grows than S. angustifolia, var., pulchella. Wight long ago obtained it as a medicinal bitter from the hills west of Vizagapatam.

Beddome records that the root of the plant that he found at Jabalpur was very bitter.

The group has a very considerable range, occurring in the Himalaya from Hazara in the west through all the parts that we know, and in China south of the Yang-tze-Kiang to the neighbourhood of the China Sea over Canton and in the island of Hainan As a rule the species do not deeply penetrate the Himalaya. We may take as the northern limit of the group the Himalaya and the valley of the Yang-tze-Kiang in Central China, which, indeed, are in the same latitudes. South of this line the group extends intermittently to Ceylon and down the mountains of Assam and Burma to the rugged neighbourhood of Nat-taung on the south-west edge of the Shan plateau. Over the greater part of the area of the group, the one species, S. angustifolia, extends. In the Himalaya and China it has with it Swertia nervosa, but not quite over the whole of the line. In the Shan plateau it has with it two segregates—S. exacoides and S. paupera. In the South of India with it are Swertia trichotoma and Swertia corymbosa. Just beyond its area are Swertia Lawii in the Sahyadri range and Swertia zeylanica in the centre of Ceylon. It is very curious that Swertia angustifolia does not occur in the Western Ghats. In the north of its area long-sepalled varieties predominate; and the associated ally—Swertia nervosa—is long-sepalled: in the south of its area short-sepalled varieties predominate and the associated allies are short-sepalled. In the north of the area of the group the species have very tender leaves and are short-lived, springing up at the beginning of the rains and dying at the end of them. In the south we get firm leaves in all the species except Swertia angustifolia; and Swertia angustifolia does not occur as far south as the firmer-leaved species. The anatomy of the leaf of S. zeylanica has been studied by Parkin and Pearson. It is the most xerophytic species of the group, with more or less isobilateral semi-erect leaves, and the most Southern. The species with more or less acuminate petals have a limited distribution from the Nilgiri hills southwards. In some of the Burmese plants, here assigned to Swertia angustifolia, var, pulchella, there is a tendency to acumination in the petals so that they approach Swertia trichotoma, but I have not been able to distinguish them by any good character from the true plant The real difficulty in distinguishing species of this group centres on Swertia trichotoma, which should be carefully studied in the field to see exactly what are the best marks by which it may be diagnosed from Swertia angustifolia on the one hand and Swertia corymbosa

on the other. Swertia zeylanica may not be truly separable from Swertia corymbosa. Swertia Lawii, which is a most elegant plant when growing, strikes me as quite distinct from the rather clumsy stout Swertia corymbosa of the Nilgiri hills.

The altitude which these plants attain is not great. It is rare for them to be found above 7,000 feet in the Himalaya, and they descend to the plains just at the foot of the Himalaya. The lowest record is 250 feet above sea-level at Shikarighat, where Mr. C. B. Clarke obtained Swertia angustifolia. Griffith found the same species on a riverine sand or shingle-bank near Kuch Behar: Kurz and Gamble have collected in the Darjeeling Terai: and Wallich and others in the Terai of Oudh. All the species love open grassy places, particularly hollows where the grass grows long; and the more tender-leaved species are found where there is a fair amount of moisture about the surface of the soil.

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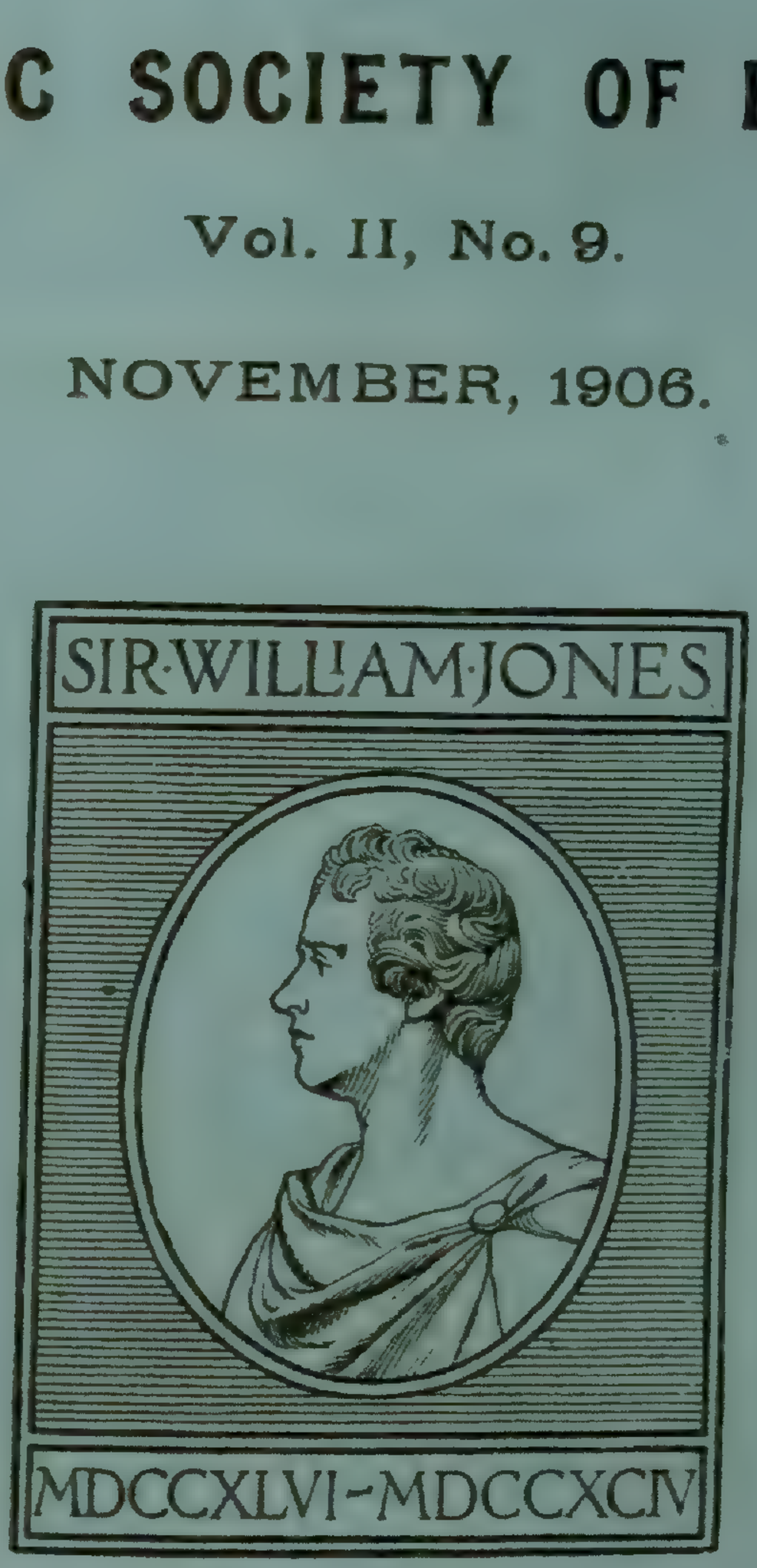

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NOVEMBER, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 7th November, 1906, at 9-15 P.M.

The Hon. Mr. Justice Asutosh Mukhopadhyaya, M.A., D.L., Vice-President, in the chair.

The following members were present :—

Dr. N. Annandale, Babu Sasi Bhushan Bose, Mr. I. H. Burkill, Mr. R. Burn, Babu Monmohan Chakaravarti, Mr. J. A. Chapman, Mr. J. A. Cunningham, Mr. Hari Nath De, Mr. L. L. Fermor, Rev. Fr. E. Francotte, S.J , Mr. H. G. Graves, Mr. D. Hooper, Mr. W. W. Hornell, Mr. T. H. D. La Touche, Mr. C. Little, Dr. M. M. Masoom, Lieut. Col. D. C. Phillott, Pandit Yogesa Chandra Sastri-Samkhyaratna-Vedatirtha, Babu Jadoo Nath Sen, Mahamahopadhyaya Haraprasad Shastri, Mr. H. E. Stapleton, Pandit Vanamali Vedantatirtha, Pandit Rajendra Nath Vidyabhusana, Mahamahopadhyaya Satis Chandra Vidyabhusana, Rev. A. W. Young.

Visitors :—Mr. G. S. Abbott, Mr. E. Brunetti, Babu A. Das, Mr. J. M. D. La Touche.

The minutes of the last meeting were read and confirmed.

One hundred and forty-two presentations were announced.

The General Secretary announced that Kumar Narendra Nath Mitra Bahadur and Mr. E. Thurston have expressed a wish to withdraw from the Society.

The President announced that the exhibits which had been lent out to the Victoria Memorial Gallery in the Indian Museum, have been received back temporarily.

Mr. Charles Henry Kesteven, Offg. Solicitor to Government ; *Mr. W. B. Whitehead*, I.C.S., Assistant Commissioner, Simla ; *Mr. F. B. Bradley-Birt*, I.C.S., Joint Magistrate, 24-Parganas ; *Pandit Gauri Dutta Misra Vidyabhushan*, M.R.A.S., Gauhati ; *Captain C. E. Luard*, I.A., Indore ; *Mr. Robert S. Finlow*, Fibre Expert to the Government of Eastern Bengal and Assam ; and *Mr. William Woodward Hornell*, Assistant Director of Public Instruction, Bengal ; have been elected Ordinary Members during the recess in accordance with Rule 7.

Mr. P. B. Bramley, United Provinces Police, proposed by Mr. T. D. LaTouche, seconded by Lieut. Col. D. C. Phillott ; *Mr. C. A. Clarke*, I.C.S., Post Master General, Madras, proposed by Mr. R. Burn, seconded by Lieut. Col. D. C. Phillott ; *Mr. W. C. MacCabe*,

Chief Engineer to the Calcutta Corporation, proposed by the Hon. Mr. C. H. G. Allen, seconded by Dr. W. C. Hossack; *Mr. C. Bergtheil*, Imperial Bacteriologist, proposed by Mr. I H. Burkill, seconded by Mr. D. Hooper; and *Lieut. J. Inglis Eadie*, 97th Deccan Infantry, proposed by Lieut. Col. D. C. Phillott, seconded by Dr. N. Annandale; were ballotted for as Ordinary Members.

The following papers were read :—

1. *Notes on the latitude of the Presidency College Astronomical Observatory.—By* PHANINDRALAL GANGULI, M.A. *Communicated by* MR. C. LITTLE.

2. *A Further note on Earwigs* (Dermaptera) *in the Indian Museum, with the description of a New Species.—By* MALCOLM BURR, B.A., F.E.S., F.L.S., F.C.S. *Communicated by* DR. N. ANNANDALE.

3. *Note on the habits of the Earwig* LABIDURA lividipes, *Dufour. An addendum to* MR. BURR'S *paper entitled "A Further note on Earwigs in the Indian Museum."—By* DR. N. ANNANDALE.

4. *Cirrihipèdes Operculés de l'Indian Museum, de Calcutta.—Par* A. GRUVEL. *Communicated by* DR. N. ANNANDALE.

This paper will be published in the *Memoirs*.

5. *Notes on the Houbāra or Bastard Bustard* (HOUBARA MACQUEENII).—*By* LT. COL. D. C. PHILLOTT, *Secretary, Board of Examiners, Calcutta.*

6. *Some notes on the so-called Mahīpāla Inscription of Sarnath.—By* ARTHUR VENIS.

7. *Description of two Indian Frogs.—By* G. A. BOULENGER, F.R.S. *Communicated by* DR. N. ANNANDALE.

8. *The Paladins of the Kesar Saga. A Collection of Sagas from Lower Ladakh, Tales* 1–2.—*By* REV. A. H. FRANCKE.

This paper will be published in a subsequent issue of the *Journal* and *Proceedings*.

9. *Some Arab Folk Tales from Ḥaẓramaut.—By* LT. COL. D. C. PHILLOTT and R. F. AZOO.

10. *Notes on the Pollination of Flowers in India, Nos.* 1-3.—*By* I. H. BURKILL.

11. Ascaris lobulata, *Schneider, ein Parasitaus des Darms von* Platanista gangetica —VON DR. V. LINSTOW. *Communicated by* DR. N. ANNANDALE.

12. *Notes on the Freshwater Fauna of India, No IX. Description of new Freshwater Sponges from Calcutta, with a record of two known species from the Himalayas and a list of the Indian forms.—By* DR. N. ANNANDALE.

13. *Notes on the Freshwater Fauna of India, No.* X. Hydra orientalis *during the Rains.—By* DR. N. ANNANDALE.

14. *Some notes on the Maurya Inscription at Sarnath.*—*By* A. Venis.

15. *Indian Logic as preserved in Tibet.*—*By* Mahamahopadhyaya Satis Chandra Vidyabhushana, M.A.

These last six papers will be published in a subsequent issue of the *Journal* and *Proceedings.*

The First Meeting of the Medical Section of the Society was held on Wednesday, the 8th August, 1906, at 9-15 P.M.

Lt. Col. G. F. A. Harris, M.D., F.R.C.P., I.M.S., in the chair.

The following members were present :—

Dr. A. S. Allan, Lt. Col. F. J. Drury, I.M.S., Dr. W. C. Hossack, Dr. W. W. Kennedy, Captain W. McCay, I.M.S., Captain J. W. Megaw, I.M.S., Major J. Mulvany, I.M.S., Captain J. G. P. Murray, I.M.S., Major L. Rogers, I.M.S., Captain J. J. Urwin, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Lt. Col. G. F. A. Harris, I.M.S., was elected Chairman.

1. Lt. Col. Drury showed water-colour drawings of a case of the red variety of Mycetoma.

2. Captain Megaw showed for Lt. Col. Lukis, who was unavoidably absent, coloured drawings and stereoscopic photographs of a case of Ichthyosis Hystrix (Crocker).

3. Major Rogers showed drawings of a case of congenital unilateral naevus in a native boy, of which only two cases have so far been recorded.

4. Lt. Col. Harris showed drawings of cases of Raynaud's disease, Exfoliative Dermatitis, Lupus Erythematosus and Syphilitic Psoriasis.

5. Major L. Rogers read a "Short Historical Note on Medical Societies and Medical Journals in Calcutta."

50. *Note on the latitude of the Presidency College Astronomical Observatory.*—*By* PHANINDRALAL GANGULI, M.A., *Presidency College Astronomical Observatory. Communicated by* C. LITTLE, ESQ.

The latitude of our observatory has been found by Talcott's method to be 22° 34′ 31″·2 N. While I was engaged in determining the azimuth constants of the clock stars, it accidentally occurred to me that $\frac{5}{1\,3}$ and $\frac{1\,2}{1\,3}$ would respectively represent the values of the sine and cosine of our latitude with sufficient approximation.

If ϕ be the latitude, *i.e.*, $\phi = 22°\,34'\,31''{\cdot}2$, then sin ϕ = ·3838979 and cos ϕ = ·9233756. Converting ·3838979 into a continued fraction, we get

$$\cdot 3838979 = \frac{1}{2+}\ \frac{1}{1+}\ \frac{1}{1+}\ \frac{1}{1+}\ \frac{1}{1+}\ \frac{1}{7+}\ \frac{1}{1+}\ \cdots$$

The successive convergents of this continued fraction are

$$\frac{0}{1},\ \frac{1}{2},\ \frac{1}{3},\ \frac{2}{5},\ \frac{3}{8},\ \frac{5}{13},\ \frac{38}{99}\ \cdots\cdots$$

Similarly we get

$$\cdot 9233756 = \frac{1}{1+}\ \frac{1}{12+}\ \frac{1}{19+}\ \frac{1}{1+}\ \cdots\cdots$$

and the successive convergents are

$$\frac{0}{1},\ \frac{1}{1},\ \frac{12}{13},\ \frac{229}{248}\ \cdots\cdots$$

It is evident that $\frac{5}{1\,3}$ and $\frac{1\,2}{1\,3}$ are respectively the sixth and third convergent of the continued fractions. $\frac{5}{1\,3}$ is in excess of the value of sin ϕ by ·0007175 and $\frac{1\,2}{1\,3}$ is in defect of the value of cos ϕ by ·0002987.

In fact $\frac{5}{1\,3}$ and $\frac{1\,2}{1\,3}$ are the sine and cosine of 22° 37′ 11″·5, *i.e.*, of the latitude of a place which is 2′40″·3 (arc) or 3·1 miles north of our observatory. These values $\frac{5}{1\,3}$ and $\frac{1\,2}{1\,3}$ serve all our practical purposes and are very convenient in all the numerical computations in which the latitude of our observatory is involved.

51. *Description of two new Indian Frogs.*—*By* G. A. Boulenger. F.R.S. *Communicated by* N. Annandale.

Rhacophorus tæniatus, sp. nov.

Vomerine teeth in two oblique series between the choanæ. Head a little longer than broad; snout truncate or obtusely acuminate, as long as the diameter of the orbit; canthus rostralis distinct; loreal region nearly vertical, concave; nostril much nearer the end of the snout than the eye; interorbital space broader than the upper eyelid; tympanum two-thirds or three-fourths the diameter of the eye. Fingers free; toes barely half-webbed; disks moderately large, that of the third finger measuring about two-fifths the diameter of the eye; subarticular tubercles moderate. Tibio-tarsal articulation reaching the eye. Skin smooth or finely areolate above; belly granular. Purplish brown above; a narrow lighter vertebral line; a broad light band from the upper eyelid to the groin, bordered above and beneath by a dark-brown band, the lower extending over the temple and the loreal region to the end of the snout; a white streak from below the eye to the shoulder; no dark bars on the limbs; a light streak along the outer side of the tibia; lower parts white.

From snout to vent 47 millim.

Two specimens from Purneah, Bengal.

Compared to *R. maculatus* and *leucomystax* this species differs in the narrower head with vertical lores, in the smaller digital disks, and in the absence of all trace of web between the fingers.

Ixalus annandalii, sp. nov.

Snout pointed, strongly projecting, a little shorter than the diameter of the orbit; canthus rostralis distinct; loreal region concave; nostril equally distant from the eye and the tip of the snout; interorbital region broader than the upper eyelid; tympanum just distinguishable. Fingers short, free; toes short. webbed at the base; disks of fingers and toes rather small. The tibio-tarsal articulation reaches the eye. Skin smooth above; a strong glandular fold from the eye to the shoulder; throat smooth; belly and lower surface of thighs granular. Greyish olive above; a dark bar between the eyes; a curved dark band on each side of the back, from behind the eye to above the groin; a dark streak below the canthus rostralis, another, vertical, below the eye, and a third from the eye to the shoulder; a dark bar on each segment of the limbs; lower part greyish, spotted or marbled with brown. Male with a large subgular vocal sac.

From snout to vent 16 millim.

Specimens were obtained by Dr. N. Annandale in the E. Himalayas, at Kurseong, altitude 5,000 feet, in May last.

I. annandalii is closely allied to *I. parvulus*, Blgr., differing in the pointed snout and the smaller digital disks.

[This little frog is common in the neighbourhood of Kurseong, where it is generally found among dead leaves on the ground in open woods.—N. A.]

52. *A Further Note on Earwigs (Dermaptera) in the Indian Museum: with the Description of a New Species.*—*By* MALCOLM BURR, B.A., F.E.S., F.L.S., F.G.S. *Communicated by* N. ANNANDALE.

Dr. Annandale has obligingly communicated me a further box of Earwigs belonging to the Indian Museum; it does not include many species, but some are of no little interest, enough to warrant a supplementary note to my former paper on the subject (*Journ. Asiat. Soc. Bengal*, 1905, p. 27). As comparatively little is yet known of the Dermaptera-Fauna of India, which promises to be exceedingly rich and interesting, and as I am at present engaged upon a general revising of this order of insects, the opportunity of examining Indian material is of great value to me, and I shall very gladly welcome any further material which may be accumulated by collectors in India. These insects are interesting, not difficult to catch, nor to pack and despatch, and the good chance of discovering novelties is an additional inducement to research.

Genus DIPLATYS, Serville.

1. *gerstaeckeri*, Dohrn, var. *calidusa*, Burr. Kurseong, 5,000 ft. E. Himalayas, 21-29. v. 60, 9518/14. Taken by Dr. Annandale. This form has been previously recorded from Darjeeling.

2. *gladiator*, Burr. Calcutta, ♂ ♂, Nos. 9503, 9507,—08/14; ♀ ♀, 9496, 9498/14. A very distinct species; hitherto only known from the single male described by me in the previous paper. ["What I take to be the larvae of this species are not uncommon in Calcutta during the hot weather under flower-pots resting on stones."—N. A.]

3. *siva*, Burr ?. One larva, No. 9517/14, from Kurseong, E. Himalayas, 5,000 ft. 21-29. v. 06., taken by Dr. Annandale.

From its size and colour, I presume this to be the nymph of *Diplatys siva*, Burr, the largest and darkest member of the genus; its large size and the incipient wing-flaps, showing clearly the venation of the future wing, point to it being a nymph ready to change; of the caudal setae, one is missing; the other has 15 segments; the basal segment is very long (2.5 mm.); the next five are shorter, together approximately equalling the first; the remainder are each about 1.25 mm. long, very slender and cylindrical; the total length of the appendage is about 13 mm. and of the body 10·5 mm. The species has been previously recorded from Darjeeling.

Genus PYGIDICRANA, Serville.

1. *picta*, Guer. Calcutta, ♂ ♂, 9482,—84,—91,—93,—94/14, and ♀ ♀, 9481,—97,—95,—9500/14, and larvae, 9460,—61,—73,—83/14. Also a female from Kurseong, 5,000 ft., E. Himalayas. 21-29. v. 06, taken by Dr. Annandale. Of this species, Dr, Annandale remarks that it is "common in Calcutta among dead leaves at the base of trees."

Genus FORCIPULA, Bolivar.

1. *decolyi*, Borm. Kurseong, at 5,000 ft. E. Himalayas, 21-29. v. 06, taken by Dr. Annandale. ♂ ♂, 9511,—14/14; 1 ♀, 9515/14; larvae, 9512,—13,—1614. Of this species, Dr. Annandale remarks, "under stones at edge of mountain streams, practically in the water. When forced towards the stream, they swam rapidly on the surface; but they did not enter the water of their own accord. Their position must have rendered them liable to be submerged or washed away by sudden floods." This is the first recorded account of earwigs swimming.

Genus LABIDURA, Leach.

1. *bengalensis*, Dohrn. Calcutta, 1 ♀, 9492/14.

2. *riparia*, Pall., var. *inermis*, Brunner. ♂ ♂, Nos. 9462,—65,—67,—69,—66,—70,—72,—76,—77,—80,—9502/14; ♀ ♀, 9463,—68,—71/14; larvae, 9464,—74,—75,—78,—79, An. 9505-06/14: Purneah District, ♀ ♀, 9526,—41/14.

On this species Dr. Annandale appends an interesting note—"By far the commonest species in Calcutta. They lie in crevices, such as those in the bark of trees, and when a small cockroach or other suitable insect passes them, the abdomen is rapidly shot out sideways and the forceps seize the insect by means of a sudden twist. The prey is then transferred to the mouth, sometimes being held also by the forceps; but should the earwig be disturbed, it runs away carrying the prey in the latter. If one individual comes upon another which is feeding, the former often attempts to steal the food. The rightful owner then threatens the other by directing its forceps towards the aggressor over its back; but I have never seen one earwig nip another, nor have I been able to induce one to nip my finger."

This is a valuable addition to the scanty records of observation on earwigs using their forceps. Much evidence is collected and published by Monsieur Gadeau de Kerville in a very interesting article published in the *Bulletin de la Société Zoologique de France* (1905), under the title "Note sur les fonctions des Insectes Orthoptères de la famille des Forficulidés." Such bionomic observations very greatly increase the value of a collection of earwigs.

3. *lividipes*, Dufour. Purneah District, ♂ ♂, 9538,—51/14. Subspecies *vicina*, Lucas. Purneah District, ♂ ♂, 9521,—27/14; Calcutta, ♀ ♀, 9485,—86,—87,—88,—89,—90,—9501, An. 9510, An. 14; Purneah District, ♀ ♀, 9533,—42/14. Taken in Calcutta by Dr. Annandale "at light."

Genus ANISOLABIS, Fieber.

1. *annulipes*, Luc. Purneah District, 1 ♂, 9548/14; ♀ ♀ 9540, 49/14.

2. *brunneri*, Dohrn? Purneah District, ♂ ♂, 9525,—30,—31,—32,—35,—37,—39,—45,—46,—50/14. I am unable to determine this species with satisfaction; in a general absence of noteworthy characters, it would appear to approch *A. brunneri*, but the type was described from Tasmania; these specimens agree with some sent me from Ceylon by Mr. Green, which de Bormans himself determined doubtfully as being *A. brunneri*. It may be that they require a new specific name, but they seem to be chiefly characterised by negative points.

3. *annandalei*, sp.n.

Statura mediocris; rufo-nigra, testaceo-variegata; antennæ 16—17-segmentatæ, fuscæ, segmentis primis pallidescentibus; mesonotum elytris rudimentariis lateralibus instructum; abdomen apicem versus sat dilatatum; segmentum ultimum dorsale transversum, mediosulco sat profundo impresso; forcipis bracchia ♂ basi remota, incrassata, triquetra, in medio longitudinis attenuata, incurva, inermia, bracchio dextro quam sinistro fortius incurvo. ♂.

♂ Long. corporis.....10–12·5 mm.
„ forcipis..... 1·75–2 mm.

Head reddish, smooth and shining, darker in the centre; sutures fairly distinct.

Antennae with 16—17 segments, typical, the basal segments testaceous, the rest dark greyish-brown.

Pronotum ample, subquadrate, somewhat broader posteriorly than anteriorly, all borders straight, hinder angles rounded; disc somewhat tumid, but metazona scarcely noticeably more flat than prozona; median suture fairly distinct; sides distinctly reflexed; dark fuscous, varied with testaceous, especially on the borders; slightly longer than broad.

Mesonotum smooth, ample, transverse, bearing the elytra.

Metanotum normal, posterior border sinuate.

Elytra present as small, elongated, testaceous, oval flaps on each side of the metanotum; as long as the mesonotum, and about one quarter as broad.

Feet yellowish-testaceous, the femora and knees sometimes marked with a narrow black band, which is often obsolete.

Prosternum oblong, scarcely attenuate posteriorly.

Abdomen dark reddish black, shining, very finely punctulated; somewhat flattened and broadened towards the apex (in the manner of typical *A. maritima*, Bon. ♂); sides of the segments, as seen from above, slightly recurved; as seen from the side, pointed posteriorly, and bearing a small horizontal keel.

Last dorsal segment ample, broader than long, very finely punctulated, with a deep median impression; hinder border roughened and truncate.

Penultimate ventral segment very large, broad and ample, well rounded posteriorly, entirely covering the last ventral segment.

Last ventral segment almost entirely covered by the preceding, visible at the corners, where a longitudinal small keel is visible.

Pygidium scarcely visible, very small, short, blunt and rounded.

Forceps with the branches remote at the base, stout and triquetre in the basal half; crenulate on the inner margin, straight; in the apical half, strongly attenuate, smooth, unarmed, and incurved; the right branch is a little more strongly curved than the left. ♂ only. ♀ unknown.

Hab. India, Purneah District, 3 ♂ ♂, Nos. 9522,—29,—34/14.

This species somewhat resembles *A. mæsta and A stâli;* it is larger than the latter, much paler in colour in the anterior part of the body, and the legs have not the very marked black bands of *A. stâli.* It also differs from *A. mæsta* in the paler colour of the anterior part of the body, and in the larger elytra.

I have great pleasure in dedicating it to my friend, Dr. Annandale, as a slight recognition of the interesting material which he has brought before me.

53. *Note on the habits of the Earwig* Labidura lividipes, *Dufour—an addendum to Mr. Burr's paper entitled, "A Further Note on Earwigs in the Indian Museum.—By* N. ANNANDALE.

Mr. Burr has just returned to me further specimens of *Labidura lividipes* (the typical form and subspecies *ricina*), to which the following note applies :—

These little earwigs frequently come to light singly or in small numbers during the hot weather and the rains, and specimens can generally be taken round the arc lamps in the public gardens in Calcutta at this time of the year, the two forms occurring together. Large numbers were noted round an oil lamp in the Museum compound on the evening of June 16th, after a wet and stormy day, the first of the monsoon. Several persons have told me that they saw enormous numbers of small earwigs round their lamps on the same evening in different parts of Calcutta. On the preceding and following evenings, only a few individuals were seen.

I have often watched earwigs of this species expanding and folding away their wings. The wings are generally expanded by a rapid movement of the anterior part of the body, suggesting a shrug of the shoulders; but sometimes a hitch occurs and this movement is insufficient to stretch out both wings properly. The abdomen is then bent upwards and backwards and the forceps are used to unfold the delicate membrane. They do not seize this membrane, however, but are closed together during the operation, and are used as a lever or smoothing organ. In a similar manner they are often employed to push the wing into its place beneath the elytra, although movements of the thorax play an important part in this process also.

54. *A Short Historical Note on Medical Societies and Medical Journals in Calcutta.*—*By* Leonard Rogers, I.M.S.

Now that a Medical Society has once more been come to life in Calcutta in shape of a section of the Asiatic Society of Bengal, the occasion of its first meeting appears to be an appropriate one for recalling former efforts in the same direction, in this, the premier seat of medical learning in India. Recently, while engaged in an examination of the older literature on fevers in India for another purpose, I was struck by the number of attempts to found medical journals in Bengal during the nineteenth century, some of which had but a short existence on account of their being dependent on the energies of one or two men, on whose removal to other spheres their offsprings came to an untimely end. The following account deals with such of these journals and societies as I have been able to find records of in the library of the Medical College, which is especially richly endowed with ancient medical literature, and I have brought a volume of each different series for exhibition to-night.

Transactions of the Medical and Physical Society of Calcutta, 1825-1845.

As early as March 1823 The "Medical and Physical Society" was founded in Calcutta, and in March 1825 the first volume of its transactions were published by Messrs. Thacker and Co., St. Andrew's Library, being printed for them by the Baptist Mission Press, by whom the proceedings of the Asiatic Society are still printed. It is curious to read in the preface to this volume the statement that, "It must not therefore be imagined that we are in an unexplored region, or are likely to discover new morbid conditions or indications of cure," but it was hoped that new and useful medicines might be found. At the time this volume was published 213 members had been enrolled, including most of the Bombay service as well as almost all those of Bengal and some of the Madras Presidency, so that the publications of the transactions, which included contributions from all parts of India, was rightly considered the most important work of the Society. The first President was James Hare, and the Secretary, John Adam, while the members of the Medical Board of Bengal were patrons, and the Government of Bengal allowed the Society the privilege of sending the proceedings of the meetings to its members post free during the first year of its existence. Another important feature of the Society was that both a library and a museum were started by it, the donations to which are recorded in the yearly transactions, and as at a later date Allan Webb was one of the officers, it appears to be highly probable that this collection of specimens formed the starting point of the series described in Webb's "Pathologica Indica," and consequently of the present museum of the

Medical College, in which many of Webb's original specimens are still preserved.

The rules of the Society are printed at the end of the first volume of the transactions, from which it appears that the meetings were held on the first Saturday of every month at 8 P.M. in the rooms of the Asiatic Society where we are now gathered, and the following was the procedure: "Such communications to be laid before it by the Secretary, as had been received in the intervals. Papers to be read; and calm and temperate discussion encouraged on the subjects of which they treat. The Members will afterwards converse on professional topics in general; or communicate to the Society accounts of cases, and any interesting medical intelligence they may be possessed of." The Society was open to all medical men and veterinary officers. The subcriptions from resident members, including those at Dum Dum and Barrackpore, was Rs. 12 a quarter, and the same sum half-yearly for non-residents. The subjects for discussion included Meteorology and Medical Topography, Botany and Zoology, these subjects being well represented in the transactions, so that the functions of the Society were closely analagous to the present Natural History section of the Asiatic Society with the addition of purely medical subjects. The more important papers were circulated to the resident members before the meeting so as to encourage discussion. Medical men were admitted as visitors to one meeting only, and distinguished members of the profession were elected Honorary members, some eminent foreigners appearing among them. From a special resolution adopted on the retirement of Dr. James Hare from India, it is clear that he was the real founder of this, the first Medical Society of India

This Society published yearly volumes of transactions from 1825 to 1827, and then bi-annual ones up to 1835. In 1837-8 six quarterly journals were distributed among the members, but in 1842 a large volume was published containing reprints of many of the papers of the last few years, and a ninth volume was issued in 1845, which is the last to be found in the Medical College library. The volumes each contained 500 or more pages, and included some coloured plates of rare diseases, while many of the papers in them are referred to in Norman Chevers' comprehensive "Commentary on Indian Diseases," published in 1886, so it is clear the Society had a successful career and its publications must have been of great utility in its early days when no other medical periodical appeared in India, and personal intercommunication between different parts of the country was very difficult and slow.

India Journal of Medical Science (Corbyn's Journal), 1834-1838.

In the meanwhile a monthly medical journal had made its appearance in 1834, edited by Messrs J. Grant and J. T. Pearson, and two years later by F. Corbyn, and it is referred to in some later

writings as "Corbyn's Journal," although its original title is "India Journal of Medical Science." It appeared regularly up to 1838, but I have not been able to find any later volumes. The first volume contains monthly Hospital Reports by W. Raleigh, in which the prevailing diseases and interesting cases met with at the Presidency General Hospital are described, and it is interesting to be able to trace the seasonal variations of different fevers in these descriptions of a very similar kind to those prevailing at the present day, although true malarial ones were more common in that early period than they are now. The annual volume of this journal amounted to about 500 closely printed large octavo pages, and contain some coloured illustrations of rare diseases. The journal paid its way during the first year of its existence, without any official patronage, so it evidently fulfilled a want. It is worthy of note that in 1838 the "Transactions of the Medical and Physical Society of Bombay" first made its appearance, while in the following year the "Madras Quarterly Journal of Medical Science" sprang into life, as these events may partly account for the premature decease of the pioneer Calcutta medical journal.

The India Register of Medical Science.

Edited by Edward Edlin, M.D., 1848.

Another attempt to found a monthly medical journal in Bengal was made in 1848, and twelve parts duly appeared during that year. Unfortunately the first four numbers are missing in the Medical College copy of this work, so I have not been able to discover the origin of this effort, although the cause of its premature decease after a single year's existence is recorded in a pathetic note to the following effect: "The uncertainty of the duration of the campaign in the Punjab and other circumstances, induce the Proprietor and Editor very reluctantly to place the 'India Register of Medical Science' in abeyance for one or two months, pending the inquiry, if any member of the profession will undertake for the profession that office of Chronicler for 1849, which it has been our pleasure to be able, however indifferently, to perform in 1848. The remoteness of the Chenab renders either literary responsibility, or literary proprietorship on the banks of the Hooghly, unadvisable." He appears, however, to have appealed in vain, and one more medical journal came to an untimely end. The volume which was published, however, contained some valuable papers, including an account of Dempster's classical inquiry into the connection of canals with malarial fevers, and his origination of the spleen test.

The Indian Annals of Medical Science, 1853 to 1877.

It was not long before another and more successful medical periodical was commenced in the form of a "Half-yearly Journal of

Practical Medicine and Surgery," the first number of which appeared in October 1853. Part of the plan of this journal was to publish yearly "An original report upon one of the more important and prevalent of the diseases of Tropical climates; the papers contributed by observers in various parts of India to be placed in the hands of one or more gentlemen who had made the subject under consideration their particular study, and who will arrange the materials which they contain into the form of a systematic report of the disease." Dysentery was the first subject selected for treatment in this novel manner, but although the editors appealed for material in several successive numbers, they never succeeded in carrying the idea into execution. The 37 volumes of the "Indian Annals" are two well known to require any lengthy notice here, many classical papers having appeared in them, from the first descriptions of typhoid fever in India in Europeans and natives respectively by Scriven and Ewart in 1854 and 1856, to the excellently illustrated account of Madura foot by Lewis and Cunningham in 1876.

The Indian Medical Gazette, 1866.

The premier Indian medical journal of the present day needs but little notice here, so it will be sufficient to recall its birth in 1866 in the form which is happily still familiar to us all. That it has amply fulfilled the hopes of its founders is evident from its continued and increasing success under its present able Editor. May its weight never grow less!

Recent Calcutta Medical Societies.

It only remains for me to briefly recall the medical societies which have existed in Calcutta during recent years, the most flourishing of which was the Calcutta Medical Society founded in 1880. Before this Society was successfully started, an attempt was made to found a Bengal Branch of the British Medical Association, a notice of which appears in the journal of November 15th, 1879; but that particular number is missing from the Medical College library, so I have not been able to examine it, the only record to be found in the journal of about that date. In one of the presidential addresses delivered before the Calcutta Medical Society, it is stated that this last institution arose from the defunct Bengal Branch of the British Medical Association. Dr. D. B. Smith was the first president of the Calcutta Medical Society, while the Secretaries were Robert Harvey and Kenneth McLeod, the last named having been most intimately associated with it during nearly the whole of its existence, the latter part of which is within the memory of many of our members. The last meeting of which I can find any record in the pages of the "Indian Medical Gazette" was recorded in the February number of 1898. The meetings were held in the afternoons at the Medical College, and much valuable work was done by it. After its decease there was no medical

society in Calcutta for some years, although in the sister presidency towns of Bombay and Madras, flourishing ones exist, each of which publishes a journal of its proceedings, although the number of medical men in those cities is less than in Calcutta. Some four years ago a medical club was opened by the native practitioners in Harrison Road, where papers were occasionally read; and during the present year it has been developed into a medical society with regular meetings and a publication of its own, the first number of which has very recently appeared.

Such is briefly the history of former medical journals and societies in Calcutta as far as I have been able to ascertain. Doubtless there are omissions, which I hope some of our senior members may be able to supply. It has been a subject of just reproach that the capital city of India should have been without a medical society at the beginning of the twentieth century, but I deem it of happy augury that we meet to-night in the same room where the first medical society of India met 83 years ago; and I trust we shall long continue to carry out the duty we owe to our profession, by recording, for the benefit of others less favourably placed than ourselves, the lessons learnt day by day from the extensive experience derived from practice in the great hospitals of this city.

55. *Some Arab Folk Tales from Ḥaẓramaut.*[1]—By Lieut.-Colonel D. C. Phillott and Mr. R. F. Azoo.

INTRODUCTORY NOTE.

The following stories are a selection of a number told to me by a Ḥaẓramī Arab in my service. They are in the ordinary colloquial dialect of Ḥaẓramaut, and were taken down in writing by Mr. Azoo, Arabic Instructor to the Board of Examiners, just as they fell from the lips of the narrator, who, together with Mr. Azoo, has more than once revised the written Arabic. These tales are interesting from an anthropological as well as from a philological point of view. The narrator is a man of some education, who fully discriminates between the colloquial and the literary speech. The peculiarities, therefore, that will be observed, are not to be condemned as mere illiterate vulgarisms: they belong to the idiomatic speech of a respectable and at least fairly educated class.

As regards pronunciation, the following points should be noted:—

ث is pronounced like *th* in the English word "thin"; ج is often pronounced like *y*, but sometimes as a slightly hard *g*, as in *gĭt*—mosque, for instance, being pronounced either *masyit* or *masgit*; ق is a hard *g* as in the English "gun"; ض and ظ have the same pronunciation, that of *th* in "though," if the *th* of this word is emphasized[2]; ذ has the sound of *th* in "though," if the *th* be softened; ن is frequently changed into ل,[3] and ا sometimes into و, thus لوخُذ for ناخُذ "we take"; occasionally ذ becomes ل, as الا for اذا; a superfluous ا is sometimes inserted, thus أَجَا for جَا "he came"; on the other hand an ا is often omitted, as in كَل for أَكَل "he ate," خَوْ for أَخُو "brother," حد for أَحَد "one," هَلِي for أَهْلِي[4] "my family," تَان for أَتَان "she-donkey," علبيت for عَلَى ألبيت "the house"; letters ars sometimes transposed, as لَمَخ for مَلَخ "to draw"; مَغَط for غَمَط "to swallow."

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[1] Or *Ḥaẓramūt*.

[2] The tongue must be protruded further forward than when pronouncing the English "though."

[3] The ن of the first person, plural, present tense, is always so changed.

[4] هلي for اهلي is also common in Baghdad.

As might be expected, many of the words used are not to be found in the dictionaries. Further, many dictionary words are used in a sense quite foreign to their dictionary meanings, quite foreign even to the meaning contained in the root. The following are examples :—

طيار [1] "ready"; معقرب "ready"; عمبور [2] "fresh-water fish"; يَوم "the moment"; مَع يَوم "as soon as"; دويله "old"; شنقوف "beak (of a bird)"; حَيش (for حَاشَا) "God forbid"; أَهْل "wife"; مَاسي for مُسِيْءٌ "offender"; نَقَهْوَى "to take coffee" (for شَرِبَ القهوة); تشا شَى "to take tea"; فهد [2] (a cheetah) "cunning"; صقر [3] (a Saker falcon) "intelligent"; مخربة [4] "bicycle"; (for modern Arabic دَرَّاجَة); لِمَنسَلِم (= لِمَن سَلِمَ "to those who will be safe or alive then") "next year, the coming year" [5]; العام [6] "last year"; قَال "to shake"; أَيات for أَي "which?" الما for الى ما = حَتَّى; مَالا = مَالذي "what?"; كَانَ (= the matter was so) is used for قال "the narrator continues."

The following are a few grammatical peculiarities :—

The particle بَ or بِا prefixed to the Aorist or Present Tense makes it Future, as انا باروح "I am just going" or "I will go."

The genitive case is frequently formed by the word حقّ "property," as العبد حقّه "His slave." The particle قد appears to be often redundant,[7] and, unlike classical Arabic, it can be prefixed

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[1] This may have been imported into Yemen from Haidarabad, Dakkhan.

[2] Classically سمك is either a fresh-water, or a salt-water fish.

[3] Apparently no longer a metaphor.

[4] Used by the Yemeni Arabs of Haidarabad.

[5] Ex. اعطيك نصف المبلغ الان والباقي لمنسلم "I will give half the amount now and the balance next year."

[6] Used also in Baghdad for "last year" but classically "this year."

[7] This قد possibly is equivalent to the Hindustani *to*.

to a pronoun, as قدهم با يروحون "Are they going?" The pronoun of the second person singular feminine is ـِش instead of ـِك, thus كِتابِش "thy (feminine) book," فاتِش (for فاتِكِ) "Did he escape thee?"

Instead of the لَ introducing the apodosis of a condition, ان is used, as لو جيت اتي بالكتاب ان كان رحت امس "Had you brought me the book, I would have gone yesterday."

The Passive of the triliteral is فُعْلَ instead of فُعِلَ, thus, كُتْب *ktub* for كُتِبَ *kutiba*.

Verbs are sometimes incorrectly followed by prepositions thus, خطب في اخته for خطب اخته.

Prepositions are used incorrectly, as فصل مع الشاره "There is a break in the clouds," where مع is incorrectly used for في.

Words are used redundantly, as ما جاء = مَا حَد هوجا "He did not come"; من شِق الفلوس for من الفلوس In the expression شوفته شويفه "His appearance was a little appearance," that is, "he was mean in appearance," the use of the diminutive is perhaps an idiom, and not a grammatical peculiarity.

I. THE LADY'S INUENDO.

There was once a traveller who travelled from country to country. On the day our story opens he arrived at a certain city and entered the mosque. A lady living near the mosque saw him and sent her negress to ask him who and what he was, and whence he came. The negress came to him and found him sitting in the mosque. Said she to him, "My mistress has sent me to ask who and what you are, and whence you have come." He said, "Faith,[1] I am a traveller, and, as for my lineage, I am a *Shaikh*."[2] The

[1] *Lit.* "By God!"

[2] *Shaikh*; in Ḥaẓramaut, "a professor." *Shaikh* is properly a title given to the descendants of Abū Bakr.

slave girl returned with the news to her mistress. The mistress said, "Go back and tell him that I will send him his supper." The negress did so. In the evening the lady sent him, by the hand of the negress, a cake of bread, four sets of sheep's trimmings, and a bowl full of soup, saying to the negress, "When you deliver these, say to him 'My mistress says the moon is full, the sea is at high tide, and the stars are four.'" Off went the negress, but on the way she stole half the loaf and one of the sets of sheep's trimmings, and drank half the soup. The remainder she handed over to the traveller with her mistress's message. "All right," said the traveller. He looked well at his supper and found half a loaf, three sets of trimmings and half a bowl of soup. He said to the negress, "Tell thy mistress, that the moon was eclipsed, the sea was at an ebb, and the stars were three." The negress returned and gave this message to her mistress. Then said the mistress to her slave, "Thou hast stolen the stranger's supper." "I have not," said the negress. "How is it," said the mistress, "that he only received three sets of trimmings when I sent four? I sent a whole loaf of bread and a full bowl of soup, and only half of them reached him?" Then the mistress got up to that negress and beat her—and when I left the house she was still beating her.[1]

II. THE STORY OF THE STUPID TURK.

There was a Turkish garrison in Mecca, which at the end of three years was relieved. The new reliefs knew not their way about the city, so people used to guide them.

Now one day one of the soldiers went to the meat market to buy meat and vegetables. In the market he bought what he wanted. As he was carrying the meat in his hand in the open street, down came a kite and snatched it out of his hand. The Turk took out a revolver, and, finding a cock close to him, fired at it and killed it. A passer-by said to him, "Oh Effendi, what has the cock done to you?" The Turk said, "By God, a brother of his has carried off my meat." "But," said the passer-by, "this is a domestic cock, and that was a wild kite." "Never mind," said the Turk, "they are birds, both this and that." The Turk then returned to the market, bought some more meat, and cooked his breakfast—and when I left him he was still at his breakfast but he did not invite me to share it.

III. STORY OF THE FOOLISH FATHER.

A man once married and had an only son. His wife then died. The father took pains in rearing the boy till he reached the age of eight years. Now the father was poor. One day he

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[1] The narrator nearly always closes his stories with some personal remark of a like nature.

happened to obtain a quarter of a *riyāl*.[1] He began talking with his son about the disposal of the money, and said to him, "We have a quarter of a *riyāl*, and with it we will buy a hen: the hen will then lay eggs: we will put them under her and she will hatch them. When her family grows up, we will sell the lot with the mother, for two *riyāls*. With these *riyāls* we will buy a she-goat: the goat will conceive. When she brings forth, we will rear the kid till it grows up, and will then sell it with its dam, and buy with their price a she-donkey. The she-donkey will conceive and bring forth. When the foal grows up we will sell it and its dam." "No," said the boy, "when it grows up I will ride it." Up got the father and slapped his son behind the ear. Now the man had on his finger a ring, which struck the bone, so the boy died. The father cried out, and the Governor's officials arrived and carried him off. The Governor said, "On such and such a day you must present yourself at the Court." The father attended on the day appointed, and was sentenced to be beheaded. After the execution, the body was borne out and buried—but I was not present at the funeral.

IV. THE APE AND HIS INSTRUCTOR.

A man once went out into the jungle and found a small monkey, which he seized, brought back to the town, and educated well. Now this man had a shop. One day he placed the monkey in his shop. When people came to purchase articles, they found only the monkey present. They went off and sought out the owner of the shop and said to him, "Oh So and So, we went to buy at your shop, but did not find you there." He said to them, "Didn't you find the monkey there?" They said, "Yes, as for the monkey, it is sitting there all right." He said, "Whatever you want, he will give it to you." The next day they went there, and the monkey gave them all they wanted, and they went their way. A certain man met the owner of the monkey and said to him, "Oh So and So! You have placed a monkey in your shop. Whoever comes to the shop can take anything he likes, without the monkey being able to stop him." The owner said, "I have taught him, and he wont let people carry off things." The man answered, "A bet between me and you: I'll go and rob the monkey." The owner said, "All right!" The stake was fixed. The man went off to the monkey. He sat in the shop and began to play with the monkey: he clapped his hands and said to the monkey, "Do this." The monkey copied him. Then he said, "Put your hands on your loins like this." The monkey did so. Then he said, "Put your hands over your eyes like this." The monkey did so. The man then stole from the monkey one *raṭl*[2] weight, and his pen and his ink-stand, and

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[1] *Riyāl* the Austrian dollar, coined specially for the Arabs. Its present value is said to be Re. 1-8.

[2] *Raṭl* or *riṭl* is roughly a pound of 12 oz.

hid them in his money-bag. He then went to the shop-keeper and said to him, "Take them and give me the bet." The shop-keeper gave him the wager, returned to his shop, and chastised the monkey. Two months after the two met again. The robber of the monkey said, "Do you want me to go and rob your monkey again?" The owner replied, "Never again will he let himself be robbed." The man said, "And if I should rob him?" Theowner replied, "The original bet is doubled." "All right," rejoined the other. Off he went and sat in the shop with the monkey, and did to the monkey as on the former occasion; and the monkey copied him till the man placed his hands over his eyes. Then the monkey stopped, and stretched his eyes wider open with his fingers. The man said, "Not like that; put your hands *over* your eyes." The monkey stretched open his eyes all the wider. The man saw that he could do nothing with the monkey, so he returned to the owner and said to him, "Here is your wager; the monkey would not let me rob him." The owner said, "Here is the amount of the *first* wager which you won from me; it I will take, but as to the second amount, it is not lawful for me; it is yours, take it." "Then the one went to his house, and the other to his shop. When I left them, the monkey was sitting in the shop. I bought a 'fifth'[1] of carrots, but did not tender him the coin. I was just about to depart when he cried out, and jumped at me, and seized me by the skirt. The monkey's owner called out, "What's the matter; what have you done to the monkey?" "Nothing," said I, tendering the monkey the coin, when it released me and I went off. Now here the story ends, and peace be on high and low.

V. THE ADVANTAGES OF EDUCATION.

Once upon a time there was a man: he married and had a son. The boy grew up without receiving any instruction from his father: he was an ox in ignorance. When his father died, the son married and in time had one son. This boy grew up and was taught all useful knowledge, till he had a ready answer for every question. Now one day he went to the Governor, who interviewed him, spoke with him, and approved him. The Governor asked him, "Hast thou any kith or kin; any father, any brethren?" The boy answered, "No; I have none but my father." The Governor said, "Well, summon thy father: I will fix for you both an allowance; for I desire that thou shouldst remain near me." The boy agreed, and went and brought his father. The Governor found that the father was unable to answer any question put to him. Said the Governor, "Great is the son, but base is the father!" Said the boy, "Nay: great is the son, and great is the father, but base the grandfather." Queried the Governor, "Why base the

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[1] *Khumsīya* "a coin which is the fifth of something," is a copper coin, the value of one pice.

grandfather?" Said the boy, "It is so; for my father taught me everything, but my grandfather taught my father nothing." "By God! you say true," said the Governor. "Look here," he added, "such and such a house is thine, and such and such a sum is thine allowance, and let thy coming and thy going to me be at thy will; but remain ever near me." When I left them, he and his father were enjoying seventeen[1] blessings, after having endured penury.

VI. THE STORY OF THE ELOQUENT PREACHER.

There was once a preacher attached to a mosque, and every Friday he used to preach a fresh sermon, which he made up out of his own head. One day his wife said to him, "It is not *thou* that preachest and composest. It is *I* that preach; it is *I* that compose." The preacher said, "None but I can preach; none but I can compose, and there is none to compare with me; for I preach every Friday a new sermon." "*Very* well," said his wife. On the next Thursday the preacher took pen and paper to write his sermon. Said his wife to herself, "I will just show him, him that dares to say that it is *he* that preaches and composes. If he were disturbed with household matters, he could not compose a fresh sermon out of his head every Friday." The preacher began to write. His wife then went to him and said, "There's no flour in the house, there's no flour in the house. There is no butter; there are no onions; no fuel; no tamarind." While she was enumerating these things, he absent-mindedly wrote down her words in his sermon. At last he laid down his pen and went to the market, and brought her her wants. The next day, which was Friday, she said to him, "You have no clothes. Will you go to the mosque without decent clothes?" The preacher went to the market and bought himself clothes, thinking all the while that he had written his sermon. He returned from the market on the stroke of eleven, and found breakfast ready. He breakfasted, took his sermon, and reaching the mosque found the congregation waiting for him. He went in and mounted the pulpit. On looking at his sermon he saw written, "There is no flour in the house; there is no butter in the house; there is no fuel; there are no tamarinds; there are no onions." Down he came from the pulpit and said to some one, "Here, take one of my old sermons and preach it: I cannot do so," The other agreed, took a sermon, preached it, and acted as *Imām*.[2] When prayers were over, the preacher went home and said to his wife, "By God! it *is* thou that preachest; it *is* thou that composest—and here are the keys; do what thou likest in the house, and let me alone to ponder on the mosque and its Fridays." The woman took the keys saying, "I

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[1] Seventeen; a local idiom. The reason for this particular number is not known.

[2] *i.e.*, Leader in prayer.

told you so. Who's right and who's wrong?" And when I left them they were still wrangling.

VII. THE ARAB DOCTOR'S DEVICE.

There was an Indian of *Ḥaydarābād* who fell from his horse and dislocated his hip. He visited various doctors, but none could help him. An Arab advised him, saying, "Journey to Arabia, and the Arabs will cure thee." The man agreed and took a letter of recommendation to a certain man of *Shiḥr*.[1] He journeyed till he came to *Shiḥr*, where he presented his letter. The addressee said, "There are Beduins in the desert of the tribe of *Ḥumūm* who visit this town, and they are noted for their medical skill."

So he sent a messenger to the market to ask if any of these Beduins were in the town. He was told that there were. He sent for one and showed to him the Indian. The Beduin asked, "How many years is it since your fall?" The Indian replied, "Four years." The Beduin said, "None can cure thee but So and So: he is now in the desert, but will come hither in three days." The Indian said, "Very well, I'll attend his coming." On the third day, the Beduin, whose name was mentioned, arrived, and the Indian was shown to him. He said to the Indian, "I will treat thee, but thou must come out with me into the desert." The Indian agreed. Then said the Beduin, "Take with thee a bull and two dollars' worth of dry salted fish,[2] and one dollar's worth of millet stalks; and to-morrow we will start." The Indian bought these things and went out into the desert in company with the Arab. They reached the Arab camp. The Beduin said, "For three whole days give the bull no water to drink; and feed it on the salt fish and millet stalks." "Certainly," said the Indian; and he did so. On the fourth day the Beduin came and saw that the bull's sides had collapsed and were touching each other. He said, "Bring out the Indian," and then filled a large earthen receptacle with water. He mounted the Indian on the bull's back, and tied his ankles firmly together. He then let loose the bull at the water, and the bull began to drink. Its belly took the shape of a bow and the legs of the Indian became stretched and parted. "Release me, release me," shrieked the Indian. "Patience," said the Beduin; and he released him not until his hip went in with a crack. Then he untied his legs, and carefully dismounted the Indian from the bull's back, and laid him on a bench, and kept him there for forty days, feeding him on ram's flesh and Indian corn, but giving him no salt.[3] The Indian recovered and departed from the Arabs to India, after having well rewarded the Beduin. He

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[1] *Shiḥr* the S. portion of the sea-coast of *Ḥaẓramaut*.

[2] Horses, sheep and cattle are fed on this salted fish, but it is generally considered by the Arabs too salt for human consumption.

[3] Salt is injurious to those who have met with an accident.

went to *Ḥaydarābād*, but I know not what happened to him there, for I did not happen to meet him—and peace is the best of endings to everything.

VIII. WINE, THE ROOT OF EVIL.

There was once a Faqir who lived alone in the wilderness, travelling from valley to valley. One day, emerging from a valley, he lost his way and wandered about in the open plain. For three days he had nothing to eat or drink. On the fourth day he reached an open space in which he spied a dwelling. He exclaimed to himself, "Assuredly[1]! I'll get food and drink in this house." Going towards the house he found that it had four gates. Now this house belonged to a Jew. As he was about to enter a gate, a sentry stopped him saying, "I will not let thee enter unless thou murder this child here." The Faqir said, "I take refuge in God from murder!" He then went to another door and found some one standing there, keeping guard over a girl of fifteen years. As he was entering, the sentry stopped him saying, "Thou hast no permission to enter unless thou embracest this girl." The Faqir exclaimed, "I take refuge in God from lechery!" He then went to the third door, and found one at the gate with wine. As he was about to enter, he was stopped by the sentry, who said, "Thou hast no permission to enter unless thou drinkest a cup of wine." The Faqir said, "This also is a misfortune." He then went to the fourth gate, and found there a man with pork. As he was about to enter he was stopped. "Why?" asked he. The other said, "Take as much as you want of this meat and then enter." The Faqir exclaimed, "What a misfortune is this into which I have fallen this day!" He went off and sat under a tree, thinking which of the four acts was the easiest. He settled on wine; so he went to him with the wine, and said to him, "Hand thy cup." He was given a draught. He then entered and found food and water, so he ate and drank. After that he turned to looking over the premises. He arrived at the gate where was the little boy, and said to the guardian, "What is this boy?" The guardian answered, "He is here to be killed by any one who likes."[2] The Faqir said, "I am the one to slay him." Now the wine was buzzing in his head, so he seized the boy by the neck and broke it. The boy died.

He then went to the gate where was the girl, and said to the sentry, "What is this girl?" The sentry replied, "She is for him who chooses." The Faqir said, "I will take her." "Do so," said the sentry. Then our friend went in to the damsel.

After that he repaired to the third gate where was the wine,

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[1] *Lit.* "By God!"

[2] The idea is that wine makes a man commit senseless crimes; it is sufficient to merely suggest a crime to a man in drink.

and took of it a second cup. Thence he went to the gate where was the pig's flesh and asked the sentry, "What is this nice meat you have? Is it for sale?" The sentry said, "This is for any that chooses to eat it." Said the Faqir, "Have I permission to eat it?" "You have," said the sentry. The Faqir ate his fill of the meat. After that he began to illtreat the inmates of the house till they drove him forth from the house. He went off and wandered in the wilderness.

Next day he came to himself and reached a certain town, and he was full of repentance for what he had done. He entered a mosque and found the Muazzin. The latter said, "Hie, So and So! whence comest thou?" The Faqir answered, "Actually [1] from the wide world. And a thing has happened to me that has happend to none as yet." The Muazzin said, "Thy news. What has happened to thee?" The Faqir then related the whole of the tale. Said the Muazzin, "O thou of little sense! Hadst thou accepted the girl in the first instance, or else murdered the boy, thou wouldst not have been guilty of all four crimes; but thou shouldst have known that the moment thou drankest the wine, all the others would follow."

He continued, "Ask pardon of thy God, and resolve never to repeat the offence; for Allah is Forgiving and Merciful." The Faqir departed, and I do not know what wilderness swallowed him up.

IX. WHO CAN TELL THE BIGGEST LIE.

One day four Arabs met together to tell each other night-tales. Said one of the four, "I make a proposal, and he who falls short of the mark, let him be the loser." "Say on," said the rest. He said, "Let us each produce a lie and see whose lie is the biggest." They said, "Do you begin." "All right," said he. Now he was a poet, so he recited :—

> "Alas for me, the day I fail in lying!
> I spied a man cupping a man with a firkin.
> Poor wretch am I who had to dig thirty wells with one needle."

Said one of them, "You are a poet, but *we* number no poet amongst us: if you like, we will speak in prose." He replied, "Lie in prose—if any of you can." Said one of them, "Seven camels had I, and one of them was *mast*. I placed this one at the head of the string and pushed through a pass, leading the string of camels. I reached the top of the pass and continued my way on the plateau. I left the camels for a minute, for a purpose, and the leader began to 'bubble.' Down came a hawk, and seizing the "red tongue," [2] bore off the whole string, and disappeared in the blue sky, and I knew not whither the hawk bore them: I lost them."

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[1] *Lit.* "By God!"

[2] The word "tongue" is used in default of a better.

Said the third, "Have you finished?" "Yes," he replied. The third then said, "I was with *Bā Dahrī*,[1] and the Autumn passed without there being any flowers for the bees. Then the bees swarmed and went to *Wādī Ḥaul*[2] and alighted on a *ber*[3] tree, and uprooted it, and, bearing it through the air placed it in the village of *Bā Dahrī*. There the bees planted it, and used to gather their honey from it; and that year they produced honey such as they had never produced before. Now I was present when the honey was boiled, and *Bā Dahrī* gave me a large measure of it."

Said the fourth, "A woman went up from *Wādī Ḥaul* to the top of the pass, collected as large a bundle of wood as she could bear, tied it, and went to drink water from a pool. A cloud came and entered the bundle, and she knew not of it. She lifted up her wood and went to her house, and carried it up on to the roof. That night lightning flashed and thunder rolled. Said people, "Whence comes this thunder?" Some said, "It is in the house of So and So." They went and asked the owner. "What's the matter?" Said the owner, "All I know about the matter is, that[4] my wife went out and brought back a bundle of wood; and it seems that she brought a cloud inside it without our knowing of it. The first thing we knew was the thunder and lightning above us." Then the master of the house closed his doors and windows,[5] and the flood swept down the stairs, and in one night so inundated *Wādī Ḥaul* that the roots of the *ber* trees were laid bare; and it was by their being bared that *Bā Dahrī*'[6] bees were able to uproot that tree."

When I left those four, each was claiming to be the greatest liar.

X. THE RELIGIOUS SUBTERFUGE.

A man once married, and his wife conceived. He swore by the triple divorcement that if a male-child were born, he would sacrifice, as a ransom, a ram with a tail seven spans in length. In due course a son was born to him, and he sought high and low for a ram with a tail of the required length, but could not find one. He returned home, and found his father-in-law[6] in the house. The latter saw from his face that he was upset and said to him, "How is it you are like this, Oh So and So?" The husband said, "By God, thy daughter is divorced from me!" Said

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[1] Bā Dahrī and his family are said to be famous in Ḥaẓamaut for their bees.

[2] *Wādī Ḥaul* is said to be a *wādī*, a day's journey from *Raydah* the village of *Bā Dahrī*.

[3] *'Ilb* is said to be the Indian *ber*.

[4] *Lit.* "By God!"

[5] *Abwāb* "The doors and windows" (with the exception of the *sudda* or street door).

[6] A wife being generally *cousin* is called *Bintu 'Ammī*, "Daughter of my uncle"; hence a father-in-law is called *'Amm*, which is properly uncle.

the father, "For what?" Said the husband, "I made the oath that if we had a son, I would ransom him by a ram, whose tail should be seven spans, and I can find no such ram." The woman overheard the conversation between her husband and her father and said,

"Span with the span of the babe, at your will,
And beware of the vow that is hard to fulfil."

They went and procured a large-tailed lamb, and measured its tail by the spans of the babe, and the tail proved to be even more than seven spans in length; so they slaughtered the ram—and it was *I* who distributed its meat to the poor.

XI. THE TURBANED BULLS.[1]

There was once a *Qāẓī* who had two sons; one was nimble-witted and anticipated the words from the speaker's mouth,[2] but the other was only middling. One day the *Qāẓī* called his sons and said to the one without talent, "Go and bring me two bulls with their turbans on." "I obey," said the son, and went out to the market. He went all round the town searching for bulls that had turbans on, but found none. He then bought two turbans, and seizing two bulls, bound their heads with the turbans, and took them to his father. Arriving at the gate, he left the bulls outside, and went upstairs to his father, and said to him, "I have brought the bulls." Said his father, "Where are they?" Said the son, "Outside." The father looked out of the window and saw the bulls, turbaned as they were. Said he, "Whence have you brought them?" Said the son, "The turbans, I bought; but the bulls I just led away from the market." Said the father, "Ah! the pains that I have taken in thine education! Go, remove those turbans and release those bulls."

Said the *Qāẓī* to his second son, "Go, bring me two bulls with turbans on." Off went the lad, and found a man with a turban as large as a clothes-basket. He said to him, "Of what sect are you?" Said the man, "I am a cultivator by sect." "Right," said the boy, "my father summons you." The two then went on together and met a second man with a big turban. Said the boy, "What is your sect?" Said the man, "I'm of the *Shāfi'ī* sect, and as to my occupation I'm a *Qabīlī*[3] of the tribe of *Murrah*." The boy left him. He found a third and asked, "What is your sect?" Said the man, "By sect I am a carpenter." Now this man had a turban as large as the first man's. Said the boy,

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[1] In Arabic a "turbaned bull" is a metaphor for a "stupid ass."

[2] *Lit.* 'He caught the sounds as they flew.'

[3] *Qabīlī*, one whose profession is war, *i.e.*, all except artisans and cultivators; here the '*Ulamā*' or Shaikhs are included in the *qabīlī*.

"Right; my father wants you." He went with them to his father and took them up to the reception room. Said his father, "Have you brought the bulls?" Said the boy, "Yes." "Where are they?" said the *Qāẓī*. "There they are," said the boy. Said the father, "I told thee to bring me *bulls*, and thou hast brought me men." Said the boy, "My father, these are two of the bulls from amongst men." Said the father, "Are there bulls amongst men?" "Certainly," said the boy; "there are amongst them, bulls, and asses, and dogs and so on." Said the father, "And how did you come to know that these particular men are bulls?" The boy narrated what had passed, and added, "He who knows not his hand from his foot, is a bull." Said the *Qāẓī*, "And who are the asses?" Said the boy, "They that sing at dusk." "And the dogs?" "Those that plunder people without right." Said the father, "Well, now I know that thou art my son, but as for *him*, he's a mother's darling."[1]

XII. THE SLAVE AND THE PUMPKIN.

A certain man had a very stupid slave. Now the slave owned a bed of pumpkins, which he visited frequently in dread lest any should be stolen. One day he was seated near them when a passer-by[2] saluted him, but getting no answer again saluted. The slave ignored the salute. The passer-by then went straight to the slave's master and said, "So and So! to-day I passed by your slave, who was sitting on the ground, and I saluted him; but he would not return the salutation, and I know not what is the matter with the slave. Now you must find out about him, as next time he may kill me or beat me; for he is an unreasoning creature." Said the master, "How is that? Is there any ill-feeling between you two?" Said the man, "No." Said the master, "All right." At night the slave returned, when his master said to him, "So and So passed by thee and saluted thee—and thou didst ignore his salute? What is there between thee and him?" Said the slave, "Master! there is nothing between us." Said the master, "Why didst thou then not return his salute?" He answered, "My master, saluting leads to talking, and talking leads to taking pumpkins."[3]

XIII. THE WISE BOY AND THE FOOLISH ONE.

There was once a man who had a clever son. One day he said to his son, "To-day we will visit the chief." Said the boy.

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[1] *Lit.*, "The son of his mother," hence a mother's darling, soft and useless."

[2] A passer-by must first salute one stationary.

[3] This saying of the slave has now become a proverb.

"All right." They then sat down to their breakfast of rice. Two grains of rice fell and stuck in the old man's beard without his knowing it. They then went to the chief, and entering the reception room found there a number of people. The boy then noticed the two rice grains in his father's beard. He said, "Father, there is a gazelle in the garden."[1] His father said, "We have sent after it the five expert shots," and passed his hand over his beard. Now there was seated near another man with his son. When the guests departed, this man said to his son, "Didst thou hear what that boy said to his father? Now to-morrow I will put something into my beard, and when we are seated speak to me as that boy did, so that people may say, 'What an intelligent boy is So and So's son!'" Said the boy, "I will."

The next day these two were present at the reception, and the father had put two grains of rice in his beard. After the guests had assembled, the boy addressed his father, "Father, the thing you mentioned yesterday, see, it is in your beard." Said the father to him, "God curse thy mother, thou ox."

XIV. THE JESTER.

There was once a destitute *Ḥaẓramī*,[2] with nothing to put under him and nothing to put over him. He journeyed from *Yaman* and reached *Ṣan'ā*[3] where was a *Bāshā*,[4] who had in his service three men to make him laugh: these used to tell him funny stories. The *Ḥaẓramī* went to the *Bāshā*. When the latter saw him, he said, "Whence comest thou, young man?" He said, "By God,[5] from *Ḥaẓramaut*." Said the *Bāshā*, "Thou art a *Ḥaẓramī*?" He said, "Yes." Then they conversed together, and the *Ḥaẓramī*'s speech pleased the Bāshā, for the *Ḥaẓramī* was quick-witted. The *Bāshā* then took him into his service and drove off his three Yemenite jesters, and would no longer permit them to come near him. These three then met together and consulted. Said they, "What are we to do about this *Ḥaẓramī*; he's come from Ḥaẓramaut and cut off our livelihood, which we got from the *Bāshā*. We must devise a 'poser' that will make the *Bāshā* dismiss him." "And what will be a poser?" said they, "I know a 'poser,'" said one; "I will say two lines of poetry, the last foot of which shall not be a word." Said they, "Recite the lines; let us hear them." He did so. Thereupon they exclaimed, "Come, we'll go to the *Bāshā*." They went to him

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[1] *Bustān*, "Garden," in Arabic gives the idea of a place full of trees and is also an Arab simile for a beard.

[2] *i.e.* an inhabitant of *Ḥaẓramaut*.

[3] The capital of Yaman.

[4] The Arabic form of the Turkish *Pāshā*.

[5] "By God": if the speaker merely replied, "From *Ḥaẓramaut*," his speech would be curt. "By God" is simply used to avoid brusqueness.

and he said, "What has brought you?" They said, "We have come for this *Ḥaẓramī*. We'll tell him two lines. If he caps them, we'll be as we are; but if he can't cap them then he[1] must go off and we will return to our former service." "Right," said the *Bāshā*; "I'll consult the *Ḥaẓramī*." Said the latter, "There is no need to consult me; I'll answer them." The *Bāshā* said to the men, "All right, to-morrow at noon present yourselves; and I will make proclamation that people may come and hear your verses." He, accordingly, had the matter announced to the people of *Ṣan'ā*.

The next day, people came together. After they had assembled, the Yemenites entered. Said the *Bāshā* to them, "Ha! how have you progressed? Are you going to recite your verses or are you not ready?" They said, "No, no, we are ready." "Come on, speak," said the *Bāshā*. Then he who was to speak the lines came forward near to the *Bāshā* and said:—

"I passed by a perfumer selling '*itr*, musk, and camphor.
I said to him '——' [*he snuffs up*].
So the perfumer said to me, 'Give back my *itr* and musk and camphor.' So I said '——'" [*he blows here through his nose*].

Up got the *Ḥaẓramī* and said, "Hear all ye present! You have heard the lines of the Yemenite: hear the answer":—

"I passed by a *traiteur*, selling bread, beans, and cucumbers.[2]
So I said to him [*here he makes a swallowing noise*].
Then said the *traiteur*, 'Give me back my bread, my beans and cucumbers.' So I said to him '——'" [*here he makes a noise of retching*].

Then up jumped the Yemenite and began to abuse the *Ḥaẓramī*; "God curse thy country! God curse the land that has reared thee, Pander and son of a Pander." Said the *Ḥaẓramī*. "Do not abuse me, abuse the *Bāshā*, who drove you from him."

Some time after this, the *Ḥaẓramī* took leave of the *Bāshā* and journeyed towards Mecca. On the road, robbers met him and robbed him of all he had. He proceeded towards Mecca quite destitute. When he arrived in Mecca, he could find none to give him food. Said he to himself, "I'll devise a stratagem which will produce me food." Now he had with him a wine-skin. He filled it full of camel dung gathered here and there, tied up the mouth, and went round the streets, seeking for some one to trick.

Now by chance there was there an Egyptian, who was also destitute and unable to procure his evening meal. He too had a skin. It occurred to his mind too to trick some one; so he took the skin he had, and filled it with ashes, and went to another street, and began wandering about. He and the *Ḥaẓramī* met. Said the latter, "What hast thou there, Egyptian?" The former said, "Faith,[3] I have flour for sale—if you want any; but what hast thou, Oh *Ḥaẓramī?*" Said the *Ḥaẓramī*, "I—

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[1] In the original, "The *Ḥaẓramī*," for emphasis.
[2] *Faqqūs*, a kind of large cucumber
[3] *Lit.* "By God!"

I have dates." The other said, "What sayest thou to thy giving me thy dates, and to my giving thee my flour?" Said the *Ḥaẓramī*, "All right." The *Ḥaẓramī* took the skin of the Egyptian, and the Egyptian took the skin of the *Ḥaẓramī*, and each went to his lodging. The *Ḥaẓramī* untied the skin to knead flour and make bread, but found in it only ashes. He burst out into abuse of the Egyptian. The Egyptian reaching home undid the skin of the *Ḥaẓramī*, inserted his hand to take out some dates to eat, but found only camel dung. He burst into abuse of the *Ḥaẓramī*. So amongst the Arabs it has become a proverb, "The thief of Egypt and the thief of Ḥaẓramaut" (are a pair).[1]

XV. THE SLAVES THAT WENT OUT SHOOTING.

(*A story to illustrate the stupidity of Negroes*).

One day four black slaves met together and said, "We will go out and shoot in such and such a *nullah*." They started off and reached the head of the *nullah*; but seeing some ibex,[2] off they bolted in fear, exclaiming, "Lions, lions! No game is this; game is something small." They reached the bottom of the *nullah*, where they scattered. One of them came across a rat. He fired at it and hit it, and shouted to his companions. They came to him and saw the rat. Said one of them, "How didst thou escape its eyes?[3]" Said he, "God preserves." Said another, "How didst thou escape its feet[3]?" Said he, "God preserves." Said the third, "How didst thou escape its head[3]" He said, "God preserves." They then took up the rat, and bore it to the village, and entered the village chanting the hunter's chant.[4] People met them and said, "What have the *Abū Suwayds*[5] got?" Said the slaves, "We have an ibex?" Said the village-people, "What kind? Let us see it." They looked at it, and lo it was a rat. People laughed out at them. Said one of the slaves, "What is the matter with you my masters. that you are laughing so?" Said one, "It is now four months since any one got an ibex—but thou hast done so to-day, Oh *Abū Suwayd*." The slave pulled himself up in pride. Now this is the story of **the slaves that went out shooting.**

XVI. *BĀ DĀHIYA*, THE SKILLFUL PHYSICIAN.

One day a Bedouin drank some camel's milk in which there happened to be some camel ticks. The ticks fastened to his liver

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1 *Also* Diamond cut diamond.

2 *Lit.* "The game." Ibex and gazelle are the only big game in *Ḥaẓramaut*.

3 These questions are in imitation of the foolish talk of negroes.

4 Chanted only by successful hunters: *vide* note 6, page 434, in Arabic text.

5 *Lit.* "Father of the Little Black," a designation of a negro.

and he lost condition day by day. At last he determined to go and see *Bā Dāhiya*. When he went to him, *Bā Dāhiya* just looked at him and said, "Bring me a bit of camel's liver." A piece of the liver was brought. He took the liver, tied it to a long thread, and said to the Bedouin, "Swallow it." The sick man swallowed the piece, but *Bā Dāhiya* retained the end of the thread in his hand. He let the liver remain for a quarter of an hour in the sick man's inside, and then hauled it up. The ticks were sticking to the bit of liver, and the sick man gradually recovered his health.

Bā Dāhiya was asked why he had not asked for a piece of the liver of some other animal. He said, "When ticks scent the odour of a camel, they loose their hold on other animals and make towards it. It struck me that the odour of a camel could draw out the ticks from his stomach."

These are the particulars of the story of the Physician, and it is, I swear, a true story and happened in *Qaydūn*, the capital of *Shaykh Sa'id bin 'Īsā*, in the *Wādī* of *Do'an* in *Ḥaẓramaut*.

XVII. THE INGENUITY OF WOMEN.

There was a man that dwelt in the town of *Raidah* the chief town of the *Dīn* tribe, and he had a beauteous daughter. Said he to himself, "I will never marry my daughter except to a man who will solve three questions that I put him: What is the strongest thing? What is the moistest thing? and What is the nicest thing?"

There came one asking the damsel in marriage. Said the father, "I will not give thee my daughter, except thou reply to my three questions"; and he put them, granting the youth a respite of three days in which to answer them. The youth departed. He could find no answer to the three questions. Then came another to woo the maid, and the father spoke to him as he had spoken to the first. Now the girl got a glimpse of this youth and he pleased her. She said to her negress, "Go to So and So, and ask him what my father said." The negress went to the youth and said, "My mistress salutes thee, and asks what her father said to thee." He said to the negress, "Commend me to thy mistress and tell her that I asked her in marriage, but her father said that only if I could answer these three questions would he marry me to his daughter." The negress returned to her mistress, and gave the whole message. "All right," said the mistress; and she took pen and ink, and wrote, "What is strongest is the horse; what is moistest, is the south wind; and what is nicest is love"; and she sent this note to the youth.

The youth took the note, and on the appointed day presented himself. Said the father, "Ha! this is the appointed day? You've found the answers?" Said the youth, "Yes." Said the father, "Speak." The youth said, "That which is strongest is the horse; that which is moistest is the south wind;

and that which is nicest is love." Said the father, "Thou art correct; but I ask thee in God's name to tell me truly, who prompted thee." Said the youth, "As thou hast asked me by God, I tell thee, by God,[1] it was thy daughter that told me, and here is her note."

The father went to his daughter in a rage, and said to her, "Since the day thou wast born till now, thou hast never set foot outside the house-door. Who is it that comes to thee? If thou tellest me, all right; if not, I'll kill thee." Said the maid, "By God, I know none that enters to me but the negress there, and thou." Said the father, "How then this letter?" Said the maid, "I sent it." Said her father, "Well, how knowest thou that the horse is the strongest thing, the south wind the moistest, and love the nicest?" Said the maid, "Yes; all kinds of animals pass below my window, but only horses shake the house." Said her father, "Right, I'm answered; but the south wind, how didst thou know that?" Said she, "I'm ever looking at that mimosa, tree: in summer it withers, but in spring it gets green; so I know that the north wind scorches it by its dryness, while what gives it greenness in the spring, is the south wind. And as to love, four times have I seen my mother in child-birth; and so great is her pain that I always say to myself never again will she do such a thing, but I know not where I am before she is in the family way again. Hence I conclude that love,—there can be nothing like it." "Well," said her father, "had'st thou not answered me thus, I would have slain thee; but as thou hast answered, God has preserved thee."

The father sent for the youth, and married him to his daughter. The youth took the girl to his own house.

After a few days he said to her, "I have a little money, about five hundred riyāls, with which I mean to trade. Now what trade shall I try?" Said his wife, "Trade in silk, and let your trading be in women's raiment, for that is easily disposed of." He said "No; I'll deal in nothing but arms." Said she, "Well; as you please."

He went off to the market, to the owner of a store, who said, "What dost thou need?" He said "I want arms—if thou hast any." "I have," said the seller: "What amount dost thou require?" The youth said, "I want one or two rifles and one or two swords." "All right," said the seller and brought him a rifle. The youth turned over the rifle and said, "How much, the rifle?" Said the seller, "Two hundred and fifty riyāls." "Right," said the youth; "and swords, hast thou any? Bring two." The shop-keeper brought two. The youth turned over the swords and asked, "How much?" Said the seller, "Two hundred and fifty." The youth tendered five hundred, and went to the arms-market, and went round with his rifle. Said one, "How much for the rifle?" "He answered, "Three hundred riyāls." Said the other, "All right; I will take the rifle from thee for

[1] *i.e.*, Truly.

three hundred, but on condition that I may take it to pieces; if I find any join, or any defect in the striker, or any knot in the wood, I shall return it." Said the youth, "I agree; take it to pieces." The buyer went aside, took the rifle to pieces, and found a join in it. He returned it saying, "If thou gavest it to me for ten riyāls, I wouldn't take it." Then the youth continued his rounds with the swords. Said the buyers, "The one for fifty, and the other for forty." The youth then went to another market, and they offered him, for the first, forty, and for the second, thirty. He went back to the first market and asked fifty, and was offered forty; for this price he sold it. For the other he was now offered thirty. He sold it for thirty. The rifle he took to the first man and sold for ten.

He then returned home having only eighty of his five hundred riyāls. Said he to his wife, "My God! So and So, son of So and So, has played me a trick, the like of which never was." Said his wife, "What did he do to thee?" He told her. She said, "All right, just show him to me." He said, "I will; he passes here daily on his way to the mosque."

The next day they waited, and the man passed. Said the youth, "There he is." Said his wife, "When he returns from the mosque, go to his shop and start talking about women. If he gives ear, tell him that thou hast a sister at home, and that if he wants her, thou wilt give her to him in marriage." The youth went and did so. Said the shop-keeper, "Wilt thou show her to me?" Said the youth, "I must ask: if I am advised to do so, I will show her to thee." Said the shop-keeper, "All right."

The youth returned to his wife and said, "He says he wants her, but on condition that he sees her." Said his wife, "Certainly; to-morrow call him, and bring him hither, and sit him in that place. When he is seated call the negress and tell her to bring water to drink, and when the girl is standing before him I will come out too." Said the youth, "All right."

Next day he went to the shop-keeper and said, "Get up. I'll show thee the girl." He went with him to his house and acted as his wife had directed. Then said the shop-keeper, "All right, follow me to my shop." The youth went after him. The former then said, "Thy sister hath pleased me. Wilt thou give her to me? How much dost thou want from me?" Said the youth, "Three thousand riyāls." After more or less talking they closed at two thousand, and the youth promised that the marriage should take place on the third day.

On the third day the shop-keeper came to have the marriage performed. The *Qāẓī* was called and he tied the knot. At evening the bridegroom visited the bride and found her other than the girl he had first seen.

The next day he went to complain to the *Qāẓī*. The *Qāẓī* summoned him and asked, "What news?" The shop-keeper said, "It is nothing; only yesterday thou joinedst me to So and So, the daughter of So and So, but So and So has sent me a negress

instead, and now I want justice from him. Find out about him." Said the *Qāẓī*, "Certainly; come to-morrow at noon."

The *Qāẓī* went to him who gave the girl, and said, "So and So has come and laid a complaint against thee." "For what?" said the youth. Said the *Qāẓī*, "He says that thou marriedst him to thy sister and sent him in her stead a negress; now that's not right, nor is it the act of decent folks." Said the youth, "As for me I married him to my sister, and it was she herself whom I sent to him." Said the *Qāẓī*, "Well; he says he wants from thee what the law requires" [*i.e.* here an oath]. Said the youth, "I am with him." Said the *Qāẓī*, "Present thyself to-morrow at noon."

The two presented themselves next day at noon. The plaintiff stated, "I asked of So and So his sister in marriage, and he took from me two thousand riyāls, and he tricked me and sent me a negress. Make him liable for all the loss I suffered for the wedding feast, etc." The defendant said, "Is this all thou hast to say or is there aught else?" Said the other, "This is all." Said the youth, "All right; listen Oh *Qāẓī* of the Muslims! So and So, son of So and So, asked of me in marriage, and stipulated that I should first show him the intended. I showed her. Since he has seen her, I say (that) God knows I am not liable for aught that he claims." The other retorted, "But I asked for thy *sister*, and thou hast not given to me her whom I saw." Said the youth, "She whom I showed thee, who brought thee water and gave thee to drink, is it she thou hast or another?" Said the shopkeeper, "The contract was concerning her who passed by, and not concerning her who brought the water." Said the youth, "I have no other but my wife, and this sister whom I gave thee yesterday." The *Qāẓī* said, "Take an oath that she whom thou didst give in marriage is thy sister.[1] If thou refusest and dost not give the oath, I will hold thee responsible for what So and So has lost."

The youth departed,[2] and took the oath. After he had taken the oath, he that had married the girl said to himself, "I have lost two thousand riyāls, and I must not send my bride away for nothing. When he went to her he found her to be an hermaphrodite.[3] He summoned his slave and commanded him to conduct her to her people's house, giving her the triple divorcement.

Some time after, the youth's wife, she that had played this trick, asked her father to sell her the house in which she had been brought up. Her father refused to give her the house. She sent for her father's slave and said to him, "Oh Mubārak![4] I'll tell you something but don't tell any one else." He said to her

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[1] In the absence of evidence such an oath would, according to Muslim law, be accepted as final.

[2] A date some days ahead would be fixed for the oath to be taken, as this would give time for reflection. The youth, by a legal quibble, took the oath, meaning that the slave was his sister in religion.

[3] The youth is not supposed to have known this; his wife concealed the fact.

[4] *Mubārak*, "Auspicious," is a name often given to negro slaves.

"All right; say it, my mistress." She said, "And wilt thou do as I say?" He said, "I will." Then she said, "When thy master goes to sleep and puts his dagger on the shelf, do thou take it and throw it on the floor." He said, "All right." She said, "But thou must do this for three or four nights." "All right," said he.

The negro went off, and when it was night he waited till his master was asleep and then took the dagger from the shelf and placed it on the ground. In the morning, when the master arose, he found his dagger on the floor. "That's odd," said he; "my dagger—I put it on the shelf, and in the morning it is on the floor—or did I forget and not put it on the shelf?"

The next night the slave did as before, and the dagger was found in the morning on the floor. Said the master, "What is it that casts down the dagger? The house is haunted and no longer fit for me—but I'll wait another night."

The third night the slave took the dagger and cast it inside of the house-door. In the morning the master couldn't find his dagger. He went to open the door and found it downstairs near the door.

The father vacated the house saying it was haunted, and that he could not pass another night in it. After a few days he sold the place to his daughter at a reduced price, and the girl took up her residence in her home—and when I left them, she and her husband were living happily together in the house.

I — حكاية السايح

كان رجل سايح يتنقّل من بلاد [1] الى بلاد ذاك النهار جا الى بلاد دخل المسجد راته حرمة و بيت الحرمة قريب المسجد صدّرت [2] الجارية قالت لها روحي اسالي الانسان هذا ايش حسبه و ايش نسبه و هو من و من اين جا راحت الجارية حصّلته قاعد في المسجد قالت له " حبابتي وصّتنا [3] و تقول من انت و ايش حسبك و إيش نسبك و من اين جيت قال والله انا رجل سايح و اما النسب فشيخ [4] راحت الجارية و قالت لحبابتهـــا قالت للجارية ردي و قولي له با اصدر لک عشا راحت الجـــارية و قالت له ان حبابتي تقول با اصدر لك عشا قال لها طيب خذت [5] الحرمة الما [6] في الليل صدرت له قرصة خبز و اربعه مغاطيف [7] وملأ [8] الصحفة مرق و صدّرت الجارية به و قالت للجارية اذا اعطيته الاكل قولي له حبابتي تقول الشهر مدير [9] و البحر مستدير [10] و الكواكب اربعة وصلت الجارية عرض الطريق سرقت نصف القرص و مغطاف و نصف المرق شربتـــه راحت بالباقي عطته اياه و قالت له تقول لك حبابتي الشهر مدير و البحر مستدير و الكواكب اربعة قال لها طيب افكر [11] في عشاه حصّل نصف القرص و ثلاثة مغاطيف و نصف المرق قال للجارية قولي لحبابتش [12]

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[1] بلاد colloq. for بلد 'town': pl. and sing.

[2] صدر "to send."

[3] وصى 'to send,' not 'to enjoin.'

[4] شيخ : a title specially applied to the descendants of Abū Bakr; also, to learned men.

[5] خذت الخ for اخذت, "She waited until night."

[6] الما = حتى : app. a contraction of الى 'to' and ما.

[7] مغاطيف pl. of مغطاف. 'Fat, lights, tripe, صفاق, a piece of each wrapped in a piece of gut.'

[8] ملأ for ملاء 'the fill of.'

[9] مُدير for مُدوّر 'round.'

[10] استدار 'to encircle; *also*, "to be round or full (moon).

[11] افكر 'to look attentively.'

[12] ش = ک "thy (fem.)."

الشهر [1] مكسوف و البحر منشوف [2] و الكواكب ثلثــة ردت الجارية و قالت لحبابتها انه يقول الشهر مكسوف و البحر منشوف و الكواكب ثلثه قالت للجارية سرقت عشا الغريب قالت الجارية لا قالت كيف ؟ صدرت اربعة مغاظيف و يقول ثلثــه وصلت و صدرت قرص خبز و الصحفــة ملانة و كل شي بلغ نصّ من ذلك قامت للجارية و ضربتها - و رحت انا و هي تضرب علجارية *

II حكاية التركي الجاهل

كانوا الترك في مكة خذوا ثلاث سنين ، على غلاق[3] الثلاث جا عوضيهم [4] وجوا [5] ناس جدد لا يعرفون طرقها ولا اسواقها روّوهم الناس ، ذاك اليوم خرج واحد من الترك يبغى يجيب لحم وخضرة من سوق اللحم جا الى سوق اللحم وخذ له الذي بغاه ثم شالّ اللحم بيده وصل في الطريق جاءت حداه و شلّت اللحم علية ، ادلى [6] التركي على الفرد [7] و لقي ديك قبَله و ضرب الديك جا واحد جازع طريق قال له ايش سوّى بك الديك يا افندي قال و الله اخوه مثّل لحمي قال له الرجل الحداه شلت لحمك و تضرب الديك قال له كلها طير هذاك طير و هذا طير .قتل الديك التركي ورد اخذ له لحم و طبخ له ضحاء و تضحّى - و رحت من عنده و هو يتضحّى ولا عزم علي *

III حكاية الولد و ابوه

كان واحد رجل تزوج وجاه ولد بعد ما ولد الولد ماتت الحرمة تم يكالف الزقر [8] لبو [9] الما وصل عمره ثمان سنين و هو قليــل المال ذاك اليوم عنده ربع ريال تم يتكلم مع الولد يقول له معنا ربع ريال بالوخذ [10] به دجاجه واذا اخذنا دجاجة با تجيب بيض وبا نطرحهن تحتها با تحفشّ [11] عليهن و اذا

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1 "The moon." 2 *Lit.* 'absorbed, sucked up'

3 على غلاق 'at the end of.' 4 عوضي incorrect form of عوض.

5 جوا for جاؤا. 6 ادلى 'stretched the hand to, took.'

7 فرد "pistol." 8 زقر = صغير 'young one.'

9 لبو = الاب 'the father.' 10 لوخذ for ناخذ.

11 حفش 'to sit upon, hatch (eggs).'

كبروا العيال [1] با لبيعهم هم و امهم بريالين و الريالين با لوخذ بهم شاه [2] والشاه با تلقح اذا جابت صيّب [3] با نخليه لما يكبر و با نبيعه هو و امه و با ناخذ بقيمتهم حامله [4] والحامله با تلقح والا [5] جابت الصيب بنخليه الما يكبر و با نبيعه هو و امه قال له الولد لا اذا كبر انا با اركب عليه قام لابوه و ضرب الولد بكف علمحلى [6] و اصبعه فيه حلقه خشعت [7] العظم الحلقه مات الولد صاح جوا له اصحاب السلطان [8] و شلوّه قال له السلطان يوم الفلاني احضر الى بيت القضاء حضر في اليوم المعلوم حكمت عليه المحكمه بقطع الراس و ندروا به [9] و دفنوه و ما انا حضرت الصلاة علجنازة و الدفن ما عاد حضرت الما هذا والله اعلم *

IV حكاية الربح [10] والذي رباه

كان واحد راح الى البرّية [11] حصل ربح صغير قبض الربح وضوى [12] به الى البلد و علم الربح كل شي و عنده دكان ذاك اليوم طرح الربح في الدكان جوا ناس يبغون حوايج من الدكان حصلوا الربح راحوا حصلوا راعي الدكان قالوا له يا فلان جينا [13] نبغى حوايج من الدكان ولا حصلنات قال لهم ما حصلتوا الربح قالوا بلى اما الربح قاعد قال الذي تبغوه با يعطيكم اياه خذوا الما اليوم الثاني جوا اعطاهم الذي بغوه و راحوا ، اتفق واحد بمولى الربح قال له يا فلان انت طارح ربح في دكانك من جا الى الدكان با يشل ذي يبغـــاه ولا با يمنع حد الربح قال له علمته ولا بيخلي حد يشل حاجه , قال له بشرط احنه ويك اروح اسرق الربح قال له طيب . وقع الخطر [14] و راح الى عند الربح قعد في الدكان و سبّر يلاعب

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1 عيال 'young; offspring': prop. of human beings.
2 شاه for شاة 'a she-goat.'
3 صيب 'the young of any animal.'
4 حاصله 'a jackass': Baghdad dial., صطيه.
5 الا for اذا.
6 علمحلى "the bone behind the ear."
7 خشع 'to make a dent or depression; to press down.'
8 سلطان 'the chief authority in a town.'
9 ندر with ب 'to take out.'
10 ربح = قرد 'monkey; ape.'
11 برية 'the country, as opposed to the town.'
12 ضوى 'to go; especially in the evening.'
13 جينا here, 'we went.'
14 خطر 'a bet, wager.'

الربح صفق بيده و قال للربح سُوّ هكذا الربح سوّى مثله قال له اطرح يدينك على ركبك طرحها قال له القي يدينك على عيونك سوى الربح سرق على الربح الرطل و القلم والدواه و خباهم في كيسه و راح قال لمولى الدكان خذ وهات الشرط عطاه الشرط راح للربح و ضربه - من بعد شهـــرين اتفقوا قال الذي سرق الربح بغيتنا اروح اسرق شي على الربح قال ما عاد با يسترق لك قال له و ان سرقت قال له الشرط الاول مردوف [1] قال له طيب راح الى عند الربح قعـــد في الدكان - سوى للربح مثل الاول و الربح يسوي مثله الما حط يدينه على عيونه رد الربح و فرّز [2] عيونه بيدينه قال له مو هو كذا لقّ [3] يدينك على عيونك فرزهن ازيد - شاف الربح ما فيه طب [4] راح الى عند مولى الربح قال له ذي الشرط ما استرق لي الربح قال له كيف سويت انت و اياه قال سويت مثل الاول انما وصلنا عند غماض العيون فرز عيونه بيدينه قال له قد قلت لك ما با يسترق لك قلت لي لا با يسترق من بعد قال له طيب اما ذا الشرط الاولي الذي شليته علي و اما ذا ما يحل لي حقك و رد له الزايد و ذاك سار الى بيته وراعي الدكان سار الى دكانه - و رحت من عندهم و الربح قاعد في الدكان و خذت منه بخمسيه [5] جزر ولا اعطيته الخمسية جيت با اروح صاح علي الربح و طمر علي و قبض في ثيابي قال مولى الربح ايش عندك ايش سويت مع الربح قلت له ولا شي و اعطيته الخمسيه فكنا و رحت و الما هنا و السلام خاص و عام *

V منافع الادب

كان رجل تزوج وجاه ولد كبر الولد ولا علّمه في شي من العلوم و صار الولد يا هو يا ثور [6] مات لبو [7] تزوج الولد زاد الولد ولد كبر [8] الولد علمه جميع العلوم و صار الولد لا يوحل [9] في سوال ولا جواب - من بعد راح ذاك اليوم الى

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1 مردوف 'doubled.'

2 فرّز 'to open wide.'

3 لقّى 'to place, put.'

4 طب = حيله 'the taking one in.'

5 خمسيه 'a small coin.'

6 يا هو يا ثور "O stupid one." "To be 'O stupid one!'" is to be stupid, *i.e.*, 'to be such that people call one, 'You stupid.'

7 لبو for الاب.

8 كُبَر for كَبِر.

9 يُوحَل *lit.* 'to be stuck in the mud.'

عند الدولة [1] شافه الدوله تكلم معه عجبه كلام الولد ساله الدولة حد لک حد ابولک حد اخوان معك قال لا ما عندي الا ابوي قال له طيب طرّب من ابوك با القي لكم مشاهره ابغاك تقعد عندي فمال له طيب راح جاب ابوه شاف ابوه الدولة كلما ساله في كلام ما جووب [2] عليه قال الدولة نعم الولد بيس الاب قال الولد نعم الولد و نعم الاب و بيس الجد قال له ليش بيس الجد قال له نعم ابوي علمنا جميع العلوم وجدي هو ما علم ابوي قال له و الله صحيح كلامك الان شف بيت الفلاني هذا لک عطيـــة و كذا كذا ريال مصروف و مجيك و مراحك يكون عندي تحضر في كل وقت - و سرت انا من عندهم و الولد هو و ابوه في سبعة عشر نعمه من بعد ما كانوا فقرا و الله اعلم *

VI حكاية الخطيب

كان واحد خطيب في مسجد وله في كل جمعة خطبة جديدة يصنّفها لمن راسه اخذ الما ذاک اليوم قالت له زوجته ما هو انت الذي تخطب ولا تصنّف اخطب انا واصنف الّا انا قال لها الخطبة انا اخطب والتصنيف اصنّف الا انا ولا حد كماي في كل جمعة با اصنف خطبة جديده قالت له الحرمة عايب خذ [3] الى ذاک اليوم يوم الخميس ادلى على دواته و البياض يبغى يصنف الخطبة قالت الحرمة انا باكيده الذي هو [4] يقول انا اخطب و اصنّف لو كان مفتكر باشغال البيت إن كان ما [5] يصنف في كل جمعة خطبة جديدة - سبّر يكتب جات الحرمة وقالت له البّر ما شي [6] و السمن ما شي و بصل ما شي و حطب ما شي و حومر ما شي هي تعدّد و هو يكتب حسب ما تتكلم الحرمة فك [7] القلم و الدواة و راح الى السوق و جاب لها الحوايج اخذ الما اليوم الثاني يوم الجمعة قالت له ثياب ما عندک ثياب و بتروح الى المسجد بغير ثياب راح الى السوق و اخذ له ثياب وهو حاسب انه قد صنف الخطبة رد من السوق ضرب الحدى عشر

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1 الدوله 'the Governor.'
2 جووب for جاوب 'to give an answer.'
3 خذ for اخذ.
4 لانه = الذي هو 'as he (says).'
5 لما كان = ان كان ما
6 لا شيء = ما شي 'there is none.'
7 فكّ 'he put by,' not with violence.

و حصّل ضحاه حاصل [1] تضحّى و ادلى على كتابه وصل الى المسجد حصّل الناس منتظرينه دخل و طلع المنبر افكر في الكتاب حصله مكتوب بر ما شي و سمن ما شي حطب ما شي وحومر ما شي و بصل ما شي نزل من علمنبر و قال لواحد شل واحدة من الخطب الدويلة [2] و اخطب بحيث انا ما اقدر قال له طيب قام الرجل هدا و شل خطبة و خطب بالناس و صلى بهم خذ الما بعد الصلاة وراح الى بيته و قل للحرمة و الله انت التي تخطبين و انت التي تصنفين و ذي الحين ذا المفاتيح وقد ما [3] با تلقينه في البيت لقيّه و خلينا افتقه للمسجد و للجمعه - اخذت المفاتيح منه قالت له ما انت قلت انا الذي اخطب و انا الذي اصنف قلت لك لا انا الذي اخطب و اصنف قلت لي لا وذا الحين كلام من في السوا و من في الخطا - و سرت من عندهم و هم في مراجلة *

VII طبيب العرب

كان هندي من اهل حيدراباد سقط من راس خيل وفكّ دومة الورک [4] ودرج [5] على الاطبّا و لا حد جاب شي فيه - حد من العرب شار [6] عليه قال له سافر الى العرب و با يداووك قل له طيب عطاه كتاب الى عند رجل في الشحر راح وصل الى الشحر عطا الرجل الكتاب قال له فيه بدو هذا بالبرية و يجون الى هنا يسمون الحموم و هم مشهورين بالطب - صدر عاني [7] الى السوق حد من البدو قال له فيه - طرب على واحد روّاه الهندي قال له البدوي كم سنة لك من ذي [8] سقطت قال له اربع سنين قال له ما با يداويك الا فلان و فلان بالبرية و في ثلاثة ايام با يجي قال له طيب با انتظر له - خذوا الما اليوم الثالث جا هذا الذي شل اسمه وروه الهندي قال له اداويك لكن لازم تندر معي الى البرية قال له طيب اندر معك قال له خذ لك دور و بريالين وزيف [9] و بريال قصب دخن و اليوم الثاني

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1 حاصل 'ready.' 2 الدويلة = القديمة 'old.'
3 قد ما = مهما 'whatever.' 4 دومة الورک 'the hip-joint'
5 درج 'to go from one to one.' 6 شار for اشار.
7 عاني 'messenger.' 8 من ذي = منذ.
9 وزيف 'dry, salted fish.'

نروح - إشترى العدوايج الهندي وخرج الى البرية في قدا [1] البدوي وصلوا الى الصرم [2] قال له البدوي ثلاثه ايام الثور لا تسقيه الما واكله الوزيف و القصب قال له طيب فعل حسب ما قال له - يوم الرابع جا البدوي شاف الثور الجنب بالثاني لشع [3] قال قربوا لي الهندي والقى ملا سفيح [4] ماء اركب الهندي علثور و ربط رجوله ذه بذه فك الثور علماء صبر الثور يشرب قومت بطونه واجترت رجول الهندي صاح الهندي فكوني فكوني قال له اصبر ولا فكه الما [5] فقعت [6] الرجل - ردت دومة الورك في مثبتها - فك رجوله و اندروا الهندي من علثور بالبصر [7] والقوه على قعاده [8] و خلوه اربعين يوم و اكله لحم كباش و ذره من غير ملح صح الهندي سافر من العرب الى الهند واكرم العربي بكرمه كبيرة وجا الى حيدراباد ولا عاد دريت ايش صار منه لاني لم اتفق به - والسلام *

VIII حكاية الفقير

كان واحد فقير دايم وهو [9] في الخلاء ويدور من شعب [10] الى شعب ذاك اليوم راح الى شعب وضيع الطريق و تهيّم [11] في ميادين وخذ ثلاثه ايام لا اكل ولا شرب يوم الرابع وصل الى ميدان وشاف في الميدان بيت و قال و الله هذا البيت با احصل لي فيه الماء والاكل توجه الى البيت و صل و البيت له اربعة ابواب و كان هذا البيت ليهودي جا با يدخل من باب منعه راعي الشوكي [12] قال له عما اخليك تدخل الا ان با تقتل الولد ذا قال اعوذ بالله من قتل النفس راح للباب الثاني حصل على الباب واحد قيم [13] يحرس بنت عمرها في خمسة عشر سنة جا با يدخل منعه قال له ما لک حكم [14] الا تجامع البنت و تدخل قال اعوذ بالله من الفاحشة راح للباب الثالث حصل واحد علباب و عنده خمر جا با يدخل من الباب منعه قال له ما لک حكم الا تشرب كاس من الخمر

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[1] في قدا 'in the company of.'
[2] صرم 'Arab encampment.'
[3] لشع 'to stick to.'
[4] سفيح 'a large basin.'
[5] الما = حتى.
[6] فقع 'to crack.'
[7] بالبصر 'carefully.'
[8] قعاده 'a couch, bedstead.'
[9] دايم وهو 'who was always.'
[10] شعب 'valley.'
[11] تهيم 'lost his way, wandered.'
[12] راعي الشوكي 'the sentry; the keeper of the watch.'
[13] قيم for قائم.
[14] حكم 'order, or permission.

و تدخل قال له و ذلّا [1] مصيبة راح الى الباب الرابع حصل علباب رجل و عنده لحم خنزير جا با يدخل منه ليش قال له خذ لک من اللحم الذي تريد وبعد ادخل قال ايش ذي المصيبة اليوم جيت فيها. راح و قعد تحت شجرة وتم يفكر ايات [2] اسهل من الاربعة هذه استخذ [3] في عقله الخمر اسهل راح الى عند مولى الخمر قال له هات الكاس عطاه شربه بعد ما شربه دخل حصل العيش [4] و الما كل من العيش و شرب له ماء من بعد رد يتفرج علبيت جا الى الباب الذي عليه الولد و قال للذي يحرس ايش هدا الولد قال هذا لمن بيقتله قال له انا الذي با اقتله و كان الخمر قزقز [5] في راسه قبض برقبة الزقر [6] وقصفها [7] تبتّى الزقر، راح الى الباب الذي عليه البنت سال الذي على الباب ايش هذه البنت قال له لمن با يجامعها قال له انا با اجامعها قال له ر ح دخل الفقير علبنت [8] و جامعها، من بعد راح الى الباب الثالث الذي فيه الخمر و خذ له ثاني كاس و راح الى الباب الذي عليه لحم الخنزير سال مولى الباب قال له ايش هذا اللحم الطيب عندک للبيع قال له هذا لمن با ياكل منه قال له رخصة آكل قال له رخصه، كل من اللحم الما ملا بطنه، من بعد آذى اهل البيت طردوه من البيت راح تهيم في الخلاء خذ الما اليوم الثاني رد عليه حسّه جاء الما بلد و هو متندم على افعاله جاء الى المسجد حصل المؤذن قال له ها من اين يا فلان قال له و الله من ارض الله [9] جرت في قصه ما بعد جرت في احد قال له اخبارک ايش من قصه جرت فيک احكى له بالامر من اوله الى آخره قال له يا قليل العقل لو كان جامعت البنت والا قتلت النفس ان كان ما [10] ضميت الاربعة كلها و من يوم شربت الخمر ادر [11] انک با تضم الاربعة كلها. قال له استغفر ربك وانو لعاد تعود لمثلها والله غفور رحيم - وراح الفقير ولا عاد دريت الى اي خلاء لقف [12].

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1 وذلا prob. و[ما]ذي الا 'this, too, is nothing but.'

2 ايات for اي or اية.

3 استخذ = اخذ.

4 عيش 'food,' not 'bread.'

5 قزقز 'to buzz.'

6 زقر 'the young one,' prob. connected with صغير.

7 قصف 'to break'

8 علبنت for على البنت.

9 ارض الله 'the world'; as all land belongs to God.

10 ان كان ما = لما.

11 Imper. apparently for the past tense دريت.

12 لقف 'he went.

IX حكاية اهل الكذب

يوم من الايام اجتمعوا اربعة انفار من العرب للسمر قال واحد من الاربعة اقول لكم بكلام و من قصّر هو القاصر قالوا له تكلم قال بنجيـــب من كذبة و بانشوف كذبة من اكبر قالوا له استبدي من عندك قال لهم طيب و هو شاعر قال في شعره: "يا وحلتي [1] يوم اني للكذب ما نا بصير، التحقت واحد على واحد حجم له بزير [2]، مسكين ذي قد بحت بابره تلثين بير، قال له واحد اما انت شاعر واحذا ما حد شاعر فينا ان تبغانا لجاوب عليك بغير شعر بلجووب عليك قال لهم جووبوا من غير شعر ان حد با يقـــدر قال واحد - كان عندي سبع بل [3] و فيهن بعير هيج و القيت البعير اول القطار و شفّيت [4] في عقبه اخطم البل وصلت راس العقبة امتديت في الجول [5] فكيت البل وسوت لقضا الحاجة صبر البعير يهدر وجا صقر و قبض بلهاة البعير و شل البل كلها و غيب بهن في الجو و لا عاد دريت في اين راح بهن وفاتن - قال له الثالث غلقت [6] كلامك قال له نعم قال الثالث: كنت عند با دهري و عبر على با دهري الخرف [7] الذوب ما حصل معجنى [8] اجتمع الذوب كله و راح الى وادي حول و حط على علب الذوب و نقر [9] العلب و شل العلب في الجو و جابه الى تحـــت شرج [10] با دهري غرز [11] العلب و صار الذوب يجني [12] من العلب و هاذك السنة القى عسل ما بعد القى مثله و حضرت الدبس [13] و اعطانا با دهري رفعـــه [14] عسل - قال الرابع - طلعت حرمة من وادي حول الى راس الشعب و لفت نقله حطب بعد ما حزمت النقلة راحت تشرب علقلت [15] جاءت سحابة و دخلت في النقله ولا عندها خبر راحت بالحطب وصلت الى تحت البيت طلعت بالحطب الى ريم [16] البيت خذوا الما في الليل الا و برق البارق و رعد الرعد سالوا الناس قالوا

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[1] وحلة 'embarrassment; as though sticking in the mud.'
[2] زير 'large jar.'
[3] بل for ابل
[4] شف 'to pursue one's way.'
[5] جول 'open place on top of mountains.'
[6] غلقت 'Have you closed, finished?'
[7] خريف = خرف 'autumn.'
[8] معجنى 'what is gathered.'
[9] نقر 'to uproot.'
[10] شرج 'a village.'
[11] غرز 'to plant, fix in the ground.'
[12] جنى 'to gather honey.'
[13] دبس 'boiled honey.'
[14] رفعة 'a measure of 11 lb.'
[15] قلت 'a cavity in a mountain, where water stagnates.'
[16] ريم 'roof.'

فين هذا الرعد قالوا في بيت فلان سالوه ايش الخبـــر قال والله الحـــرمة سرحت [1] و جابت نقله حطب و ضوت [2] بالسحابه فيها ولا عندنا خبر ولا درينا الا بالوعد و البرق فوقنا ، راعي البيت بذ ابوابه و خرج السيل من الرقاد [3] و شرب وادي حول هاذك الليلة وزان [4] جم و سبب هذا نوب بادهري زان جا حصل العلب عروقه طافه و شلـــه النوب ، و انا سبرت من عندهم و كلٌّ يقول انا الكذاب الكبير *

X حكاية الرجل و حرمته - حيلة شرعية

كان واحد تزوج بعد ما تزوج شلّت الحرمة بحمل [5] حلف في الحرمة [6] ان جانا ولد نذبح فدو [7] و يكون كبش ذيلته [8] سبعه اشبار خذ الى ذاك اليوم زاده ولد راح يبغى كبش ذيلته سبعة اشبار ما وجد شي رد الى البيت حصل عمه قده [9] فى البيت شافه عمه وجهه مقلوب قال له عمه وراك [10] يا فلان في ذا الحاله قال و الله بنتك طلقت من عقدي قال له لايش قال له حلفت فيها ان جانا ولد نفدي بكبش ذيلته سبعة اشبار ولا حصلت شي سمعت الحرمة المخاطبة ما بين زوجها و ابوها قالت "له شبّ بشبر المولود و احذر عليها تعود" راحوا جابوا كبش ذيلته كبيره شبروا بشبر الولد و جات سبعه اشبار و زايد و ذبحوا الكبش - و انا الذي قسمته على الناس *

XI حكاية الثيران المعممة

كان واحد قاضي عنده اثنين اولاد اما واحد من الاولاد ذكي يلقف الكلمة وهي فارة واما الثاني لاهو كذا ولا كذا ، ذاك اليوم جمع الاولاد قال لهذا الذي

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[1] سرح 'to go in the morning.' [2] ضوى 'to return, come back.'
[3] رقاد 'steps,' درجة 'a flight of steps.'
[4] زان 'to be, or become, in good condition.'
[5] حمل 'child in the womb.'
[6] حلف بالطلاق = حلف في الحرمه.
[7] فداء = فدو 'a sacrifice.'
[8] ذيل = ذيلة 'tail.'
[9] قده for 'emphasis.'
[10] وراك = ما وراك 'What news? What is the matter?'

ماهو شي روح هات اثنين ثيران بعمايمهم قال له طيب راح الى السوق و دار في البلدة كلها يبغى ثيران بعمايمها ما حصل شي ، من بعد اشترى ثنتين عمايم و خطم اثنين ثيران و عممهم بالعمايم و راح بهم الى عند ابوه وصل الى عند الباب خلى الثيران عند الباب و طلع الى عند ابوه قال له جبت الثيران قال له و ينهم قال له عند الباب شرف في الفتحه [1] شاف البقر معممة قال له من اين جبتهم قال اما العمايم اشتريتهن واما الثيران حصلتهم في السوق قال له ابوه وا اسفاه على ترباتي [2] فيك اندر ندّر العمايم من روس البقر وفك البقر - قال لولده الثاني رح هات اثنين ثيران بعمايمهم راح الولد حصل واحد عمامته مثل المحفر [3] ساله ايش مذهبك قال له مذهبي حرّاث قال له طيب ابوي يطرب منك راح هو وياه حصل ثاني و براسه ايضا عمامه كبيرة ساله قال له ايش مذهبك قال له مذهبي شافعي و اما النسب قبيلي [4] من مُرّة ، راح وخلاه حصل الثالث ساله ايش مذهبك قال له مذهبي نجار و عنده عمامه مثل الاول قال له طيب ابوي يطرب منك راح بهم الى عند ابوه طلع بهم الى المحضرة [5] ساله ابوه جبت الثيران قال له نعم قال له و ينهم قال هاذولا [6] قال له قلت لك هات ثيران جبت لي اوادم قال له يا والد هاذولا من ثيران بني آدم قال له و بني آدم فيهم ثيران قال له نعم فيهم ثيران و فيهم حمير و فيهم كلاب وغير ذلك قال له و عرفت هاذولا انهم ثيران بايش ؟ حكى له بالذي جرى و قال من ما يعرف كوعه من بوعه [7] هو ثور قال له و من الحمير قال له الحمير الذين يغنون وقت المغرب قال له و الكلاب قال والكلاب الذين ينهبون الناس على غير حق قال له طيب لان عرفت انك ولدي و اما فلان ولد امه [8] *

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1 فتحه 'opening, window.' 2 ترباة for تربية.

3 محفر 'a large basket for carrying earth.'

4 قبيلي one whose profession is war, *i.e.*, all the members of a tribe except artisans and cultivators. 'Ulamā, also called *Sheikhs*, are included in the Qabīlī.

5 محضرة 'reception room, court.' 6 هولاء=هاذولا.

7 كوع 'wrist bone near the thumb.' بوع 'bone near the toe.'

8 *i.e.*, his mother's darling, and not that he resembles his mother or takes after her.

XII حكاية العبد و الدبا

كان واحد معه عبد و العبد زومه [1] و معه شجرة حق دبّا [2] و كان يختلف عليها فزعان عليها من السرقة لان فيها قحازيز [3] ذاك اليوم قاعد عندها جا رجل جازع طريق سلم علعبد اول و ثاني ما قبل السلام ذاك راح تَوّا الى عند السيد قال له يا فلان اليوم عبرت علعبد و هو قاعد و سلمت عليه و لا رد السلام و لا انا داري ايش بحال العبد و ذا الحين خذ خبر العبد لا عاد يقتلنا و الا يضربنا لانه عبد زومه قال له ليش بينك شي انت وياه قال له لا قال له احسن ، خذ الى الليل ضوى [4] العبد ساله سيده قال له فلان عبر عليك وسلم عليك و لا قبلت السلام ايش بينك انت وياه قال له يا سيد ما بيننا شي احنه وياه قال له ملا [5] ليش ما قبلت السلام قال له يا سيد السلام يجر الكلام والكلام يجر قحيزوز دبا *

XIII حكاية الولد الذكي

كان رجل تحته [6] ولد و الولد ذكي ذاك اليوم قال لولده اليوم بنروح عند الشيخ قال له طيب تضحوا وضحاهم رز سقطت حبتين في لحية الشيبه [7] و لا دري بها راحوا الى عند الشيخ وصلوا المحضرة حصلوا الناس قعود افكر الولد شاف حبوب الرز في لحية ابوه قال له يا به ظبي في البستان قل له عبرنا عليه الخمسه الفرسان [8] و عبر يده على لحيته و اذا واحد هو و ولده قعود من بعد راحوا الناس قال لولده سمعت فلان اش قال لابوه شف غدوه يا اسوي شي في لحيتي و اذا كنا قعود حسب ما قال فلان لابوه قل لي خلي الناس يقولون ولد فلان رجال قال له احسن خذوا الما اليوم الثاني حضروا وطرح حبتين رز في لحيته بعد ما اجتمعوا الناس قال الولد لابوه يا به ذي قلت لي امس شفه في لحيتك قال له يلعن امك يا ثور *

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1 زومه 'a stupid fellow; a dolt.' 2 شجرة حق دبا 'a pumpkin-vine.

3 قحازيز pl. of قحزوز 'the fruit of the pumpkin plant; also applied to melons.'

4 ضوى 'to return in the evening.' 5 ملا = اذًا 'why *then*.'

6 تحته = عنده. 7 شيبة 'grey-beard; the old man.'

8 فارس means loc. 'anyone who is expert in any subject.'

XIV حكاية الحضرمي و اليمانيه

كان واحد حضرمي بارض حضرموت فلّت [1] لا تحته ولا فوقه توجّه الى اليمن اجا الى صنعا و في صنعا باشا ملقي [2] ثلاثة انفار يضحّكونه يجيبون له من السوقات [3] جا الحضرمي الى صنعا جا الى عند الباشا حال ما شافه الباشا قال له منين يا ولد ؟ قال له والله من ارض حضرموت قال له حضرمي ؟ قال له نعم وكان يتكلم معه عجب الباشا كلامه من ذكاته لانه ذكي اخذه عنده ودقع [4] الثلاثة اليمانيه ولا عاد خلاهم يدخلون عنده اتفقوا الثلاثه وقالوا كيف الخبر في الحضرمي [5] ؟ جاء من حضرموت و قطع معاشنا من عند الباشا قالوا بغيدا له معجزة [6] الذى تخرجه من عند الباشا قالوا و ما المعجزة قال واحد المعجزة عندي انا اجيب له بيتين آخر البيت ما فيه حرف قالوا هات البيوت [7] بانسمها جاب البيوت قالوا يا الله بغينا [8] عند الباشا ساروا الى عند الباشا قال لهم الباشا ايش جابكم قالوا جينا للحضرمي هذا بنجيب له بيتين إن جوب عليها فاحنا حسب ما دقعنا الباشا قد فلّا في مكانه و إلا جوّب عليها فالحضرمي يخرج واحنا نرد على حسب ماكنا عليه قال لهم طيب الباشا بااشاور الحضرمي قال الحضرمي لعاد [9] تشاورني اجوّب عليهم قال لهم طيب الباشا غدوه وقت الظهر احضروا وانا با انبي [10] من الناس يحضرون ليسمعون بيوتكم وصدّر [11] الباشا لاهل صنعا اخذو الها اليوم الثاني وحضروا الناس و الحضرمي قاعد عند الباشا خذوا بعد ما التفّوا

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[1] Destitute, from فلت 'to escape,' as though he has escaped everything.

[2] ملقي 'one that has found, acquired.'

[3] سوقات 'laughable stories.'

[4] دقع 'to turn out, drive away.'

[5] حضرمي 'a man of Hadhramaut.'

[6] معجزة 'puzzler, something to baffle,' and apparently not a miracle. In Baghdad dialect يريد له معجزة حتى يخرج 'a miracle is required for him to go away.'

[7] بيوت pl of بيت 'a line of verse.' Should be ابيات.

[8] بغينا we will now go; *lit.* "we want."

[9] لعاد تشاورني = لا عاد 'there is no need to consult me, عاد in Arabic is a verb.

[10] انبي 'I will inform.' نبأ 'news.'

[11] صدر 'sent word.'

الناس جوا اليمانيه قال لهم الباشا ها وين جيتو[1] بتجيبون بيوتكم او عادكم[2] قالوا لا لا بانجيب بيوتنا قال لهم يا الله هاتوا دخل الذي با يجيب البيوت الى عند الباشا وقال *

مررت بعطار يبيع بعطره * و مسك وكافور فقلت له — [هذا يشمّ القائل]
فقال لي العطار ردّوا بضاعتي * ومسكي وكافوري فقلت له — [هنا ينخر]
قام الحضرمي وقال اسمعوا يا من حضر سمعتو بيوت اليماني واسمعوا الجواب *

مررت بخباز يبيع بخبزه * ودجر[3] وفقوس[4] فقلت له — (هنا يبلع القائل)
فقال لي الخباز ردّوا خميرتي * ودجري وفقوسي فقلت له — (هنا يقيُ)
قام اليماني يسبّ الحضرمي يلعن بلدك ويلعن ارض ربتك يا ترس يا ابن الترس قال الحضرمي لا تسبّنا سبّ الباشا الذي طردك من عنده وبعد مدة من الزمان الحضرمي اخذ رخصة من الباشا وتوجه الى مكة وصل الما عرض الطريق التقوه الحرامية وشلّوا[5] كل ما كان معه وراح الى مكة ولا تحته ولا فوقه وصل الى مكة ولا احد عطاه شي ياكل وقال في نفسه اسوّي حيله الذي تخرج اكلي قام الحضرمي عنده مسب ولفلف الضفع الى ما ملاه المسب بحقه و عصبه وراح يدور في السوق عساه يقمر احد و اذا واحد كذلك مصري لا تحته ولا فوقه ما له عشا والمصري عنده مسب واجا على قلبه اسوي حيله واقمر احد قام للمسب الذي معه وملاه رماد واندر في السوق الثاني يدرج اتفق هو والحضرمي قال له الحضرمي ايش عندك يا مصري قال له والله[6] عندى طحين للبيع اذا تبغاه وانتا ايش عندك يا حضرمي قال له انا عندي تمر قال له ايش تشوف يوم تنطينا التمر وانطيك الطحين قال له طيب الحضرمي اخذ مسب المصري و المصري خذ مسب الحضرمي وكلّ راح الى موضعه فك عصب المسب الحضرمي يبغي يعجن الطحين ويلقيه له خبز حصّل في المسب رماد افتك يسب في المصري والمصري وصل الى موضعه فك مسب الحضرمي قال[7]

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1 وين جيتو *lit.* 'up to where have you come or reached,' *i.e.*, how have you progressed (in your plan).

2 او عادكم or, 'is anything still remaining (to be done).

3 دجر 'beans.' فقوس 'a kind of vegetable.'

5 شلوا 'carried away,' for شالوا.

6 والله a meaningless oath, like the Irish 'Faith.'

7 قال in the sense of 'to move one's hand' is rare but classical.

بيده في المسب يبغى ياكل من الثمر حصل له ضفع افذك يسب الحضرمي
ومن امثال العرب اتفقوا سارق مصر وسارق حضرموت *

XV العبيد المتصيدين

ذاك اليوم اتفقوا اربعة من العبيد وقالوا بانسرح بانقنص في شعب الفلاني سرحوا وصلوا الى راس الشعب شافوا الصيد [1] شردوا منه فزعوا قالوا هذه اساد ما هي صيد الصيد تقع [2] صغيرة وراحوا الى هابط [3] الشعب افترقوا اما واحد حصّل جرذ وضرب [4] الجرذ وصابه صاح على اخوانه جوا الى عنده شافوا الجرذ قال واحد منهم كيف لقيت [5] من عيونه قال المسلّم الله قال له الثاني كيف سويت من رجوله قال المسلم الله قال الثالث كيف سويت من راسه قال المسلم الله من بعد شاوا الجرذ راحوا به الى البلد و دخلوا في زامل [6] القوهم الناس قالوا ايش مع البو سويد [7] قالوا معنا وعل قالوا كيف بانشوفه شافوه الناس لو ذلا [8] جرذ ضحكوا عليهم الناس قال واحد ايش معكم يا اسيادي تضحكون قال له واحد لنا اربع شهر ولا حد صاب وعل الا انتم اليوم يابوسويد انتفخ العبد - هذا ما كان من حكاية العبيد وقداصتهم *

XVI باداهيه الطبيب الحاذق

ذاك اليوم رجل بدوي شرب لبن حق راحلة واللبن فيه القراد لشع [9] في كبده تم الرجل يستلّ [10] في حاله ذاك اليوم قال با اروح الى با داهيه راح وصل

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1 الصيد 'applied in Hazramaut to the ibex and the deer, the only game found in those parts.'

2 نقع 'are found.'

3 هابط 'the bottom of.'

4 ضرب 'to shoot; also to hit.'

5 كيف لقيت 'what did you do.'

6 زامل 'the chant of victory of the hunters; also applied to marriage songs.'

7 بوسويد 'Father of the little black one.' The pl. is ابو سويد.

8 لوذلا = واذا هو.

9 لشع 'to stick to.'

10 استل 'to get thinner and thinner.'

الى عند با داهيه نظره با داهيه قال با داهيه هاتوا قطبه [1] من كبد راحلة قالوا له طيب راحوا جابوا القطبه قام للقطبه وعصبها بخيط قال للبدوي امغطها [2] مغط القطبة المريض و راس الخيط تم في يد با داهيه وخلّاها ربع ساعة في بطنه من بعد جرّ الخيط اندر القراد بالقطبة وتعافى المريض من مرضه سالوا با داهيه الذاهي قالوا له ليش ما طلبت قطبه كبد شي [3] من المواشي الثانية [4] قال القراد الا [5] روّح ريح الراحلة بغك المواشي الثانية ويروح لها استخذت في عقلي ان ريح الراحلة با يخرّج القراد من بطنه - هذا ما كان من حكاية الطبيب وهي والله حكاية صحيحة وقعت في قيدون بلدة الشيخ سعيد بن عيسى في وادي دوعن في حضرموت *

XVII حكاية كيد النساء

كان واحد في ريدة الدين [6] معه بنت حسيفة النظر قال بنتي ما أزوجها الا على رجل يفتيني في ثلاث خصال ايش اقوى ما كان وايش ارطب ما كان وايش الذّ ما كان جا واحد يخطب البنت قال له ما أعطيك البنت الا إن كنت تفتينا في ثلاث خصال و ذكر له تلك الخصال ولك ثلاثه ايام مهله إن أفتيتنا في الايام المحدودة أعطيك البنت جيت [7] بعد غلاق الوعدة [8] ما أعطيك البنت راح وعجز عن الثلاث المذكورة جا ثاني وخطب في [9] البنت قال له مثل الاولي [10] راته البنت واعجبها قالت للجارية روحي الى عند فلان وقولي له ايش قال له ابوي راحت الجارية اوصلت الي عنده وقالت له حبابتي [11] تسلم عليك وتقول لك ايش قال لك ابوها قال للجارية سلّمي على حبابتش وقولي لها انا خطبت فيها وقال لي ابوها إن افتيتنا في الثلاث ازوجك على البنت راحت الجارية الى عند حبابتها وقالت لها يُسلّم عليش فلان إن ابوش يقول إن افتيتنا

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1 قطبه 'a piece.' 2 مغط 'to swallow.' 3 شي 'any.'

4 ثانيه 'other.' 5

6 ريدة name of a town. الدين name of a tribe = Raidah, the city of the Dīn tribe.

7 جيت 'in case you come.'

8 غلاق الوعدة *lit.* 'the close of the time assigned.'

9 خطب في = خطب 'to ask in marriage.'

10 الاولي = الاول.

11 حبابتى 'my mistress.'

في الثلاث الخصال ازوجك على البنت قالت له طيب ادلت [1] على القلم والدواة وكتبت الذي [2] اقوى ما كان الخيل وارطب ما كان العليا [3] والذ ما كان الجماع وارسلت الخط [4] الى عند الولد اقبض الخط خذ الى نهار الوعد و حضر قال له ها هليوم يوم الوعد تُفتينا قال له نعم قال له تكلم قال اقوى ما كان الخيل وارطب ما كان العليا والذ ما كان الجماع قال له سوا [5] كلامك لكن سالتك بالله ان تقول لي من الذي قال لك قال سالتنا بالله و الله بنتك الذي قالت لي وهذا خطها راح الى عند البنت غضبان عليها قال لها من يوم خلقت [6] وانت في البيت ما تندرين منه ومن الذي يدخل عندش ان تقولين لي والا اذبحش قالت له والله ما اعرف احد يدخل عندي الا الجارية هذه وانت قال لها مّلا [7] ايش هذا الخط قالت له هذا انا ارسلته الى عند فلان قال لها طيب بايش عرفت الخيل اقوى ما كان والعليا ارطب ما كان والجماع الذ ما كان قالت له نعم جميع الحيوانات تعبر تحتي ولا شي يحرّك القصر [8] الا الخيل يوم تجزع [9] قال لها زين اذا فقوى والعليا بايش عرفت قالت له العليا اعرفها بالسمرة [10] هذه ذي مقابلة المكان اذا في ايام الصيف غبرت [11] لانّ الشمال تحرقها من حفتها [12] و في ايام الربيع تخضر عرفت ان العليا رطبة لان العليا ما تهب الا في ايام الربيع . و اما الجماع والدتي اربع مخاطر [13] تحبل [14] و تلد و التعب الذى تشوفه [15] كثير و انا قلت [16] اذا كان هذا التعب ما عاد بتعود على كماه [17] ولا ادري الا و قد بطنها ملانة [18] عرفت [19] انه من لذة الجماع ان ما شي كماه قال لها

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[1] ادلى على ' to take ; stretch the hand to.' [2] الذي ' that which.'
[3] العليا ' the south wind.' [4] الخط ' the letter.' [5] سوا ' right' (adj.)
[6] خُلِقت = خُلُقت ' you have been created, born.'
[7] مّلا = والا ' otherwise, in that case.'
[8] القصر ' flat, or story of a house.'
[9] جزع ' to pass by.' [10] سُمُرّة = سُمرة " a kind of tree."
[11] غبرت ' becomes dusty, ash-coloured.' [12] حفة ' burning.'
[13] مخاطر ' times.' [14] تحبل حبلت ' to conceive, be pregnant.'
[15] تشوفه ' she experiences.' [16] قلت ' I thought.'
[17] ما عاد بتعود على كماه ' she will no longer do the like thing again.'
[18] ملانة ' full' fem. بطن is masc. in classical language ; fem. colloquially.
[19] عرفت ' then I knew.'

طيب لولا افتيتي لكان ذبحتش و يوم [1] افتيتي الله سلّمش و وصى [2] الولد و عقدله با لبنت شل البنت راح بها الى بيته - خذ الما بعد كم يوم قال لها عندي من الفلوس قدر خمسمية ريال وبا القي لي بيع و شرا في ايش اسوي بيع و شرا قالت له الحرمة سو [3] بيع و شرا في الحرير و يكون [4] في ابس النساء لانه يشتل سمح [5] قال لها لا ما اسوي الا في الاسلحة قالت له طيب عرفك [6] راح الى السوق جا الى عند مولى الدكان قال له ايش تبغى قال له بغيت اسلحة ان كان في عندك قال له عندي كم تبغى قال له بغيت بندق و الا بندقين و سيف و الا سيفين قال له طيب جاب له راعي الدكان بندق قلب البندق قال له بكم البندق قال له بميتين و نصّ قال له طيب سيوف عندى شي هات ثنين جاب له ثنين قلب السيوف قال له بكم قال بميتين و نص سلم له خمسمية وراح الى سوق الاسلحة درج بالبندق قال له واحد بكم البندق قال له بثلاث مية ريال قال له طيب آخذ البندق مك بالثلاث مية ولكن شرط انقض [7] البندق و اضربه ان فيه قطب [8] والا سارط [9] و الا بشعه [10] البندق اردّه قال له طيب انقض راح و نقض البندق حصل البندق مقطوب [11] رد البندق قال له لو تقول لي بعشرة ريال ما آخذه راح درج [12] بالسيوف قالوا له الواحد بخمسين و الثاني اربعين راح الى سوق ثاني قالوا له في با خمسين [13] اربعين و با اربعين ثلاثين رد يبغى الخمسين قالوا له اربعين باع بالاربعين با اربعين قالوا له ثلاثين باع بالثلاثين و البندق رد وباعه بعشرة ريال ضوى الى بيته و معه من شق الخمسمية ثمانين قال للحرمة و الله فلان بن فلان سوّى في قصّة [14] ما بعد حد سوّاها قالت له ايش سوّى فيك حكى لها قالت له طيب روّيفا اياه قال لها طيب يعبر هنا كل يوم الى المسجد خذ الما اليوم الثاني كانوا منتظرينه جزع [15] قبلهم قال لها هذا قالت له اذا رد من المسجد رح الى دكانه و افتح له

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[1] يوم 'the day that, the moment that.' [2] وصى 'to send for, call.'

[3] سو pronounced *saw* سو. [4] يكون 'it should be ; let it be.'

[5] سمح 'easily.' [6] عرفك 'as you know,' *i.e.*, do as you like.

[7] نقض 'to take to pieces.' [8] قطب 'a joint.'

[9] سارط 'a defect by which it fails to fire.'

[10] بشعة 'knot, scratch ; defect.'

[11] مقطوب 'joined, having a joint.' [12] درج 'to walk, move.'

[13] با خمسين = ابو الخمسين 'the 50 dollars one.'

[14] قصة 'trick.' [15] جزع 'to pass by.'

في ذكر النسا اذا انصت [1] قل له معي اختي فى البيت ان كان تبغاها زواج اعطيك اياها راح قال له تروينا اياها قال له باشاور ان كان [2] قالوا الناس ارويها اياه با ارويك اياها قال له طيب راح الى عند الحرمة قال لها انه يقول ابغاها لكن بشرط يشوف قالت لها طيب اذا غدوة طرب [3] منه وهاته الى هنا وقعده في المحل ذا اذا قعد طرب من الجارية و قل لها هاتي ماء اذا قد الجارية قيمة [4] عنده با اندر قبله قال لها طيب خذ الما اليوم الثاني راح الى عنده قال له قم با ارويک البنت راح وياه الى البيت حسب ما قالت له الحرمة سوى قال له طيب العقني [5] الى الدكان راح بعده قال عجبتنا البنت تعطينا اياها كم تبغى منا قال ثلاث الاف ريال زاد الكلام و نقص و سدوا على الفين و واعده للزواج يوم الثالث خذوا الما اليوم الثالث و حضر للعقد طربوا من القاضي و عقد خذوا الما الليل دخل علعروس حصلها ماهي الذي شافها اخذ الما اليوم الثاني راح الى عند القاضي مشتكي زعمه [6] القاضي قال له القاضي خبر علم [7] قال له لا علم ولا خبر امس عقدت لي بفلانه أخت فلان صدر [8] لي جارية و ذا الحين ابغيت منه ما قال الشرع وخذ خبره قال له طيب احضر غدوة الظهر راح القاضي الى عند المزوج له قال له فلان جا مشتكي منك قال له ليش قال انه يقول انک عقدت له باختك و صدرت له جارية وهذا ما يصلح ولا هذه مهرة [9] الخيار قال له اما انا عقدت له باختي و صدرتها هي بنفسها قال له طيب يقول يبغى منك ما قال الشرع قال له مقادي [10] له قال له القاضي احضر الظهر غدوة حضروا الظهر فى اليوم الثاني اندعى [11] عليه بقولة فلان بن فلان خطبت عنده في اخته و اخذ مني الفين ريال و عاب في [12] صدر لي جارية صيبه [13] و الزمه ما خسرته في وليمة وغير قال له هذا كلامک يا عاد شي معك قال هذا قال طيب اسمع يا قاضي المسلمين فلان بن فلان خطب عندي و تشرط ان ارويه و رويته من بعد ما ينظر اقول بيحجاني الله لا اصطاب له

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1 انصت 'to listen.'
2 ان كان for ان.
3 طرب من 'to call.'
4 قيمة = قائمة 'standing.'
5 العقني 'follow me.'
6 زعم 'to call.'
7 خبر علم 'Any news?' 'What news?'
8 صدر 'to send.'
9 مهرة 'action.'
10 مقادي 'agreeing, consenting.'
11 اندعى على = ادعى على 'to state his claim against.'
12 عاب فى 'to deceive, trick.'
13 صيبه 'catch hold of him.'

بشيء مما ادعى به رد ذاك قال له اما انا خطبت في اختك ولا عطيتنا الذي شفتها قال له الذي رويتك اياها الذي جابت الما و سقتك هي هاذك يا حد ثانية عندك قال له الشرط بيننا على الذي عبرت بما هو على التي جابت الماء قال له ما حد عندي الا زوجتي و اختي هذه التي اعطيتك اياها حكم عليه القاضي بيمين يا هذه الذي اعطيتها فلان انها اختك غلبت [1] ما اعطيت اليمين [2] الزمك قد ما خسره فلان و زوج الحرمة ماكان يعرف انها خنثى راح و اعطى اليمين بعد ما اعطى اليمين رد الدي اخذ الجارية قال خسرت الفين ريال ولا يمكن اسيرها هكذا قام يبغى يجامعها حصل ذه خنثى زهم العبد و قال له ودها الى بيت اهلها واعطاها الثلاث جات الى بيت اهلها - من بعد الحرمة الذي كادت الرجل طلبت من ابوها البيت الدي تربت فيه غلب ابوها ما يعطيها البيت وصت للعبد حق ابوها قالت له يا مبارك با اقول لك كلام ولا تتكلم به عند احد قال لها طيب قولي يا حبابه قالت له و با تسوي حسب ما اقول لك قال با اسوي قالت له اذا نام سيدك و طرح الجنبيه في الرفقه شلها و اطرحها هابط قال لها طيب قالت له لكن يكون ثلاث اربع ليالي تسوي هكذا قال لها طيب راح العبد حد الى الليل خلى سيده لما ينام شل الجنبية من الرفقه وحطها على الارض قام سيده الصبح حصل الجنبيه على الارض قال عجب الجنبيه حقي طرحتها في الرفقه و صبحت في الارض يا انا نسيت ما طرحتها في الرفقه خد الما الليلة الثانية فعل هكذا العبد صبحت الجنبية في الارض قال ايش هذا يندر الجنبية البيت مسكون ولا عاد يصلح لي لكن انتظر الليلة خذ الليلة الثالثة و شل الجنبية العبد و طرحها عند الباب داخل البيت خذ الما اليوم الثالث ما حصل الجنبية ندر با يفتح الباب حصل الجنبية في هابطي البيت الحلى المكان قال المكان مسكون ولا امسي فيه اخذ بعد كم من يوم و باع المكان على البنت بقاصر قيمة وحلت البنت في المكان - و رحت من عندهم وهي وزوجها في البيت في سبعة عشر نعمة •

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1 غاب 'to refuse.' 2 اعطى اليمين means to take, not to give an oath.

56. *Proposed correction with regard to the reading of an inscription on some of the Suri dynasty coins.*—*By* Col. C. E. Shepherd, *Indian Army.*

In the Journal of the Asiatic Society of Bengal, Vol. LIX, Part I of 1890, page 15A, Dr. Hœrnle has a paper—"On the Copper Coins of the Suri Dynasty." In this paper Dr. Hœrnle refers to an expression on these coins; he says, p. 155: "Thus on the "obverse legend which ought to run

"فريد الدين و الدنيا, or فريد الدنيا و الدين

"commonly exhibits the following form—

"فريد الدين الدنان

"The ن (nún) of the *ud dinan* is generally placed across the "ا (alif) of نا (ná)."

In the British Museum Catalogue "Coins of the Sultans of Delhi," and in Thomas' "Chronicles," there are many instances given under Shír Sháh, Islám Sháh, and Muhammad 'Adil Sháh, where the obverse inscription is quoted as

في عهد الامير العادل الدين الدنان

Referring to the expression

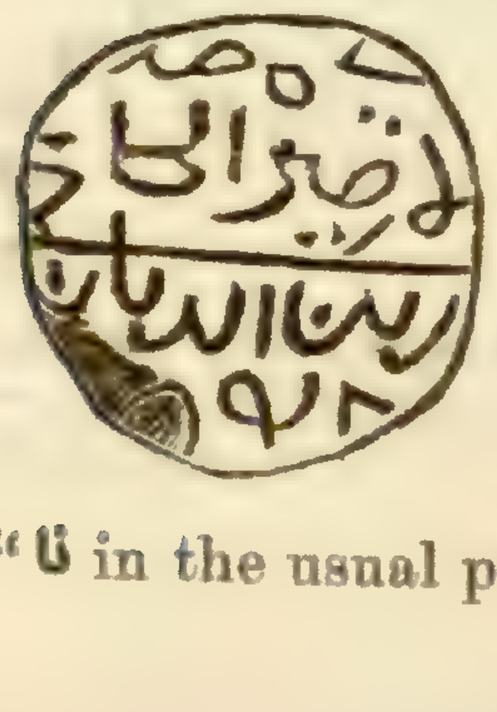
الدين الدنان

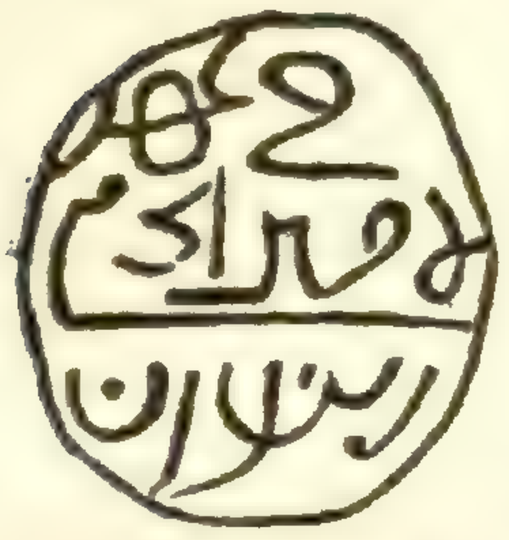
Mr. Stanley Lane Poole in the B. M. Cat. speaks of it, p. XXVIII, as "a very peculiar formula," and Dr. Hœrnle says, and says correctly, that it is "absolutely unmeaning."

It is therefore obviously erroneous. The word دنان *dinān*, is given in Richardson's dictionary as meaning "winejars," and Kazimirski, in his Arabic-French dictionary, gives the meaning as "Jarre surtout celle dout le bas est arrondi et que l'on enterre pour qu'elle puisse rester debout."

The contention in Dr. Hœrnle's paper leads one to the conclusion that he favours the idea that the final word of the phrase should be دنيا and not دنان; that the error has arisen by a blunder of the die-sinker. This idea is rather a shirking of the question than an unravelling of the difficulty.

Against accepting the view of a blunder in the word دنيا, there is the presence of a final ن. The die-sinker could hardly have blundered to the extent of putting a clear ن. Dr. Hœrnle himself says: "The ن (nún) of *ud-dinān* is "generally placed across the top of the ا (alif) "of نا (ná). It may be seen in the obverse "margin of fig. 2 and on the face of fig. 13, "29, 38. In fig. 17 ن is placed by the side of "نا in the usual position."





In the Bodleian library collection there is a coin of Shír Sháh's No. 556 that also gives a clear ن as final letter at the end of the last line. The letters in the middle of the last word, however, in this specimen are off the coin.

In none of the figures published of these Suri coins can the ان be absolutely accepted for want of the dot over the ن.

There is another solution that, it is hoped, may meet the case and receive the assent of numismatists, and that is that the final word is intended for ديان (dayyán).

In No. 13 of Dr. Hœrnle's paper, there are shown two distinct •• under the د of the final word, and to the left of the date ٩٣١ : the middle letters are unfortunately wanting in this specimen, being off the edge. The syllable hitherto usually read ان might be read يا and the two dots pointed out in No. 13 would lend support to this reading of them.

In Richardson's Dictionary, Arabic, Persian and English, ديان (dayyān) is given as: "a weigher of good and evil, hence an "epithet of God—computing, settling accounts with another, a "judge—an umpire—an administrator—religious." In his Arabic-French dictionary by A. de Biberstein Kazimirski, ديّان is given as "Qui retribue sans faute le bien ou le mal; de lá Retributeur, Dieu 2 Judge, 3 administratem gérant."[1]

It is suggested therefore that the inscription was intended to read العلم الدين الديان : *the protector of religion, the judge* : or the *just ruler* by a slight amplification of the administrator who weighs good and evil; or by the conjunction of Lane's *judge* and *ruler*. This makes sense and is in consonance with the desire of these Sultans to have their justice recognised as they assume on others of their coins the title العادل—*vide* Thomas' Nos. 343, 356 for Shír Sháh; Nos. 359, 361 for Islám Sháh and Muhammad 'Adil Sháh: the nephew of Shír Sháh and successor of Islám Sháh took 'Adil as part of his sovereignty title.

That Shir Sháh was particularly strong on the question of justice is shown by the following extract from Brigg's translation of the Ferishta. In Vol. II in the chapter on "Sheer Shah Soor," p. 100, in describing the departure of Fureed to take charge of his father's jageer that Fureed said: "That the stability of every

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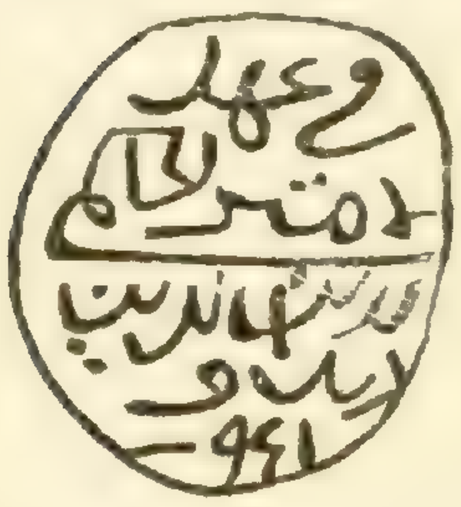
[1] Lane, in his dictionary, gives ديان (dayyān) as a requiter who neglects not any deed, but requites it, with good and with evil: a subduer—a judge—a ruler or governor—a manager, conductor or an orderer of affairs of another.

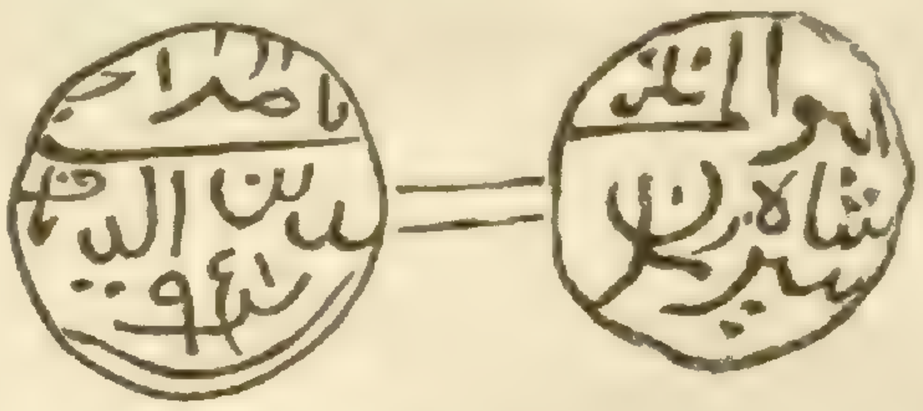
"administration depended on justice, and that it should be his "greatest care not to violate it either by oppressing the weak or by "permitting the strong to infringe the laws with impunity." He originated this phrase on his coins; his immediate successors naturally kept on the complimentary epithet.

The expression الدنيا و الدين is generally attached to the *laqab* of the Sultan, in the case of Shír Shah, see Dr. Hœrnle's No. 15, where we have فريد الدنيا و الدين; also Thomas' Nos. 359, 361, where we have on Islám Sháh's coins جلال الدنيا و الدين and the many predecessors of the Suri dynasty who used the same expression الدنيا و الدين on their coins, but always attached to the *laqab*, will readily come to the recollection of the veriest tyro in Indian numismatics.



It is therefore hoped that numismatists interested in coins of the Delhi Sultans will see their way to accepting this inscription, used solely by the Suri dynasty, having the expression العادل الدين in the middle as terminating in الديان (ud-dayyán), anyway until a better solution is arrived at, and read the whole obverse as في عهد الامير العادل الدين الديان translated as: "In the time of the Amír, the protector of religion, the just ruler."

Since despatching the above paper, the following example of a Shír Sháh coin has been met with. The diacritical marks to the left of the date can only belong to the يا of ريان and would seem to put any other reading out of the question, making, as it does, sense which the hitherto accepted reading does not. A copy of the coin from Volume LIX, of the J.A.S.B. for 1890, Plate VII, fig. 12, is attached for ready reference.



Two similarly placed dots in same volume, Plate III, fig. 13, have already been noticed in the body of this paper.

57. *Some notes on the so-called Mahīpāla Inscription of Sarnath.*—

By Arthur Venis.

In the annual report of the Archæological Survey of India, 1903-04 (pp. 222,223), Mr. J. Ph. Vogel resumes a discussion of this important document. While making no material changes in the transcript and version of the inscription published by Professor Hultzsch (Indian Antiquary, Vol. XIV, 1885), Mr. Vogel offers valuable suggestions as to the bearings of the record on the remains at Sarnath. It is these that give to Mr. Vogel's article its main interest at the present time. And I propose to consider his article briefly from this point of view.

The inscription is dated Samvat 1083. It states that the brothers Sthirapāla and Vasantapāla were subordinate to an illustrious King Mahīpāla at Kāśī; and that they repaired (1) a dharmarājikā, (2) a dharmacakra, and built (3) "*this* new Gandhakuṭī (shrine) made of stone."

Sarnath was undoubtedly the site of these buildings. We do not know the exact spot where the broken Buddha-image, which carries our inscription, was recovered. And it seems a pity that no reference whatever has been made in the present A. S. Report to Mr. F. O. Oertel's most successful excavations in 1904-05, from which fresh light might be expected on the identification of the buildings mentioned by the brothers Sthirapāla and Vasantapāla. [The A. S. Report for 1903-04 has only recently appeared in 1906; and at page 226 of it space is found for a postscriptum to Mr. Vogel's contribution but on a different subject.]

I now turn to the identifications proposed by Mr. Vogel, and take them in the order already indicated.

I. The dharmarājikā of the inscription, he thinks, is the great Stūpa which the villagers of Sarnath now call Dhamek. Mr. Vogel's points are these, briefly: (*a*) the word dharmarājikā is derived from the word dharmarāja; (*b*) Aśoka was *the* Dharmarāja of the Buddhists; therefore (*c*) the word dharmarājikā means 'a stūpa erected by Aśoka'; (*d*) from this word the current name dhamek can be derived.

I deal with these points *seriatim*: (*a*) Mr. Vogel's derivation of the word in the sense of something made or caused to be made by a dharmarāja is not contrary to grammar. But the word may, with equal propriety, be resolved into dharma + rājikā, meaning 'a line or field or spot for dharma'—rājikā being a regularly formed derivative from the noun rāji. This second explanation is more likely to be the true one. But even if Mr Vogel's derivation be accepted, his reasoning to the conclusion in (*c*), namely, that the word dharmarājikā in our inscription means 'a stūpa erected by Aśoka' is hardly convincing. Nor again as to (*d*) is the word dharmarājikā the only possible source of the word dhamek, even if this derivation be altogether correct. I should like to propose the word dharmekṣā as the source of dhaměk or dhaměkh (as it

often sounds to my ear from the lips of the village folk around Sarnath). This etymology would not be irregular, I believe; and, as to the meaning of the Sanskrit word, I need scarcely point out that it would naturally extend to 'the place where Dharma was pondered' and so become a most appropriate name for the holy ground of Sarnath. The suggestion itself I owe to a passage in Jinaprabha's Tīrthakalpa, a MS. of which is dated Samvat 1669:—"In this quarter of Vārāṇasī, at a distance of three krośas, is a place named Dharmekṣā, where there is a Bodhisattva's home (shrine), whose towering crest is gently touched by the sky."

अस्यां क्रोशत्रितये धर्मेक्षा नाम सन्निवेशो यत्र बोधिसत्त्वस्योच्चै-स्तरशिखरचुम्बिगगनमायतनम् ॥

[This M.S. has been very kindly lent to me by the Yati Dharmavijayī, Head of the Śvetāmbarapāṭhaśālā, Benares City. I read चुम्बि instead of चुम्बिग.]

About Sarnath, Jinaprabha says no more; but, possibly, the words bodhisattva, śikhara and āyatana may, in their present context, have distinct significance for the Buddhist archæologist and thus contribute, if only negatively, to the problem of identifying the Dharmarājika which the Pāla brothers restored. It is of course easy to understand how in the course of years the word dhamek should have become the name of the most conspicuous object left standing on a holy site.

II. Mr. Vogel is of opinion that the Dharmacakra of the inscription is the temple which Yuan Chwang describes as near the Dharmarājikā and enshrining a life-size image of Buddha. I am inclined to go further and hazard the conjecture that the temple which Mr. Oertel has brought to light is the Dharmackra which the Pāla family "repaired" in the year 1026 A.D. But as against this conjecture I am bound to note that the word dharmacakra may mean a monastery or, at least, a dharmaśalā (cakra = samūha); and also (according to the Trikāṇḍaśeṣa) Buddha himself—a meaning that might extend to an *image of Buddha*. Then as to the "accessories"—sāṅgaṃ dharmacakraṃ, I am unable to suggest what they were; and I imagine that Mr. Vogel, when he translates the word sāṅgaṃ by "completely," is in pretty much the same position as myself.

III. I follow him also in not attempting to locate the Gandhakuṭī—"*this* new shrine made of stone." We must wait for Mr. Oertel's report on his excavations. And there is much still for the spade to do at the Caukhaṇḍi, which is not more than half explored, and elsewhere at Sarnath. But meanwhile I must take leave to object to the translation given by Messrs. Hultzsch and Vogel of the compound aṣṭamahāsthānaśailagandhakutīm, *viz.*, shrine of stone *from* eight holy places. The idea of stones *brought from* eight places, might have been extracted from the compound, if it had contained the word śilā instead of śaila.

But as it reads in the inscription, the compound, when resolved into sentences, can strictly mean no more than this:—the shrine is made of stone; and, in the shrine are, or to it belong, eight great places (positions). I would therefore make over the word mahā-sthāna, 'great or lofty place or position,' as an architectural term, to the Indian archæologist to explain, or even to explain away, according to his needs. A 'mere grammarian,' śuṣkavaiyākaraṇa, like myself, does well to attempt no more.

As to the text of the inscription, I would offer the following remarks: The word gurava in line 1 is surely *ananvita*, unless it is a title or a class-name. Can it be the name of a class of men who are connected with pūjā in temples—a meaning which the word gurava bears, I am told, in Western India? Īśāna, Ghaṇṭādi and Gauḍa are happy readings, for which we are indebted to Professor Hultzsch. Personally I am unable to *see* these akṣaras. And what I seem to see is paśvādi instead of ghaṇṭādi.

58. *Note on the Houbara or Bastard Bustard (Houbara Macqueenii).* —*By* Lieut.-Colonel D. C. Phillott, *Secretary to the Board of Examiners, Calcutta.*

The Arab name for the bird is *ḥubāra* and *ḥubārah*: the Persian *āhū-barra* and *hūbarra*. The Baluchis call it *charz*, a name applied in Oudh to the Florikin. In Pushtu it is called *tsoṛa*, *chāṛa* and *tsāṛa,ī*. In the Punjab it is known under various names, the commonest being *tilūr*: its other Panjab names are *kharmor*, *khanmor*, and in the Kapurthala State *tughdarī*.[1] In some districts it is called *gurain* and *gurainī*, a name elsewhere applied to the great Indian Bustard.

The houbara is a winter visitor to India, and enters apparently by all the passes on the N.-W. Frontier. Arab falconers of Baghdad and Basra have informed me that they have taken the eggs and reared the young under a domestic fowl, and Persians have told me the same story. An English sportsman stated to me that he once shot a specimen near Bannun as early as the end of August; but the earliest date I have myself observed one is the 9th October, in the Tochi Valley. In the Dera Ghazi Khan district I got trustworthy information of three on a tenth of September, but I failed to put them up. These birds leave India in February and March, and are then fat and strong on the wing, and a much more difficult quarry for a falcon than in the early winter months. On a first of April I saw two near Kohat, and on a first of May I hawked and killed one in Parachinar close to the Paiwar Kotal. The heaviest weight recorded by me is 4½ lbs.

Very occasionally a stray bird stays down in India during the hot weather. Two hot seasons running, I had continuous information of a single bird near Kohat—perhaps a wounded bird, or perhaps one more silly than its fellows that had missed the moon and the last karavan of the season. and so got hopelessly 'left.'

The houbara's food is chiefly, but not entirely, vegetable. In the gram-producing district of Marwat, the seed is grown in a dry soil and left to be fertilized by the Xmas rains. The houbara that arrive in that part, pick out the grain from the ground, and fill their crops. They soon move on to the melon beds in the *thal*[2] district to feed on the seeds of burst and broken melons. Their favourite crops are, besides melons, the green leaves of mustard, turnip, and gram. They also feed on cotton, but to a less degree. In the spring, on their return migration, they are to be found in the stunted ragged wheat crops of the bare stony plains on the N.-W. Frontier; but whether they go there to feed on the green shoots, or on the weeds and insects to be found in the damp ground, I cannot say. At any rate wheat is not a favourite food of theirs. In Persia they do harm to the opium crop. In the Dera Ghazi Khan district they eat the manna that is in

1 Kapurthala falconers call the Great Indian Bustard *tughdār*.
2 *Thal*; the sandy jungle districts of the Derajat are so called.

certain spots produced on the tamarisk. The following are some of the jungle fruits, etc., on which they feed, with their Punjab names:—

(1) The fruit of the *karel* (Capparis aphylla); the fruit when unripe is called *delha*, and when ripe, *pinjū*. (In the Derajat the unripe and ripe fruit are both called *delha*.)

(2) The fruit of the *vān*, *wan*, or *jāl* (Salvadora oleoides); the fruit when unripe is called *pekrī*; when ripe, *pīlū*; and when dried, *kokan*.

(3) The fruit of the *ber* (Zizyphus Jujuba and Z. nummularia) and the *kokan ber*.

(4) Three kinds of *lāna*, viz., *khangan-khār*[1] (Haloxylon recurvum); and allied plants, *phesuk lānī*; and the *lāna*, which is called in the Derajat, *ghalmī lāna*, and is specially common in the "thal" districts.

(5) *Jawāsā* or camel thorn (Alhagi Maurorum).

(6) A plant called *dodhak* in the Derajat; perhaps the *aletī* or *galethī* of other parts—*dudhak* being applied to a family of plants that contain 'milky' juices.

(7) *Janglī ajwain* or *pahārī ajwain*, said to be a species of wild thyme: common in Parachinar. [*Ajwain* alone is the Dill seed or plant.][2]

The houbara is both gregarious and nocturnal, yet unlike geese and cranes it is not clamorous. How then does a flock avoid dispersing and losing its members? A scattered flock has some means of rallying, for rally when dispersed it does. The houbara appears to have scarcely any voice. If angered, or alarmed by being seized, it will snap its beak and emit a faint croaking sound.

When attacked by a hawk, it will puff itself up like a turkey cock, and charge the hawk, striking forwards with its powerful feet. I have seen a young and inexperienced peregrine completely knocked out of time by a blow from its wing. Its habit of ejecting a glutinous green fluid, from its vent, over a hawk that has fastened to it, is well known to all falconers. The fluid besmears and soils the plumage, and should the houbara break away, effectually impedes the flight of the hawk. In spite of all that has been said on the subject, I am convinced that this is an unconscious and accidental weapon of defence, the action being the result of fear. In proof of this it may be stated that the houbara behaves in exactly the same way if suddenly frightened out of sleep and put up in mid-day. Further, when feeding on *lāna*, the fæces are like those of the domestic fowl, and it is only when the bird is grazing on mustard leaves or certain other crops that the "mutes" have their peculiar odour and consistency.

Tristam says that the houbara defends itself by ejecting

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[1] From which *sajjī* is made.

a fluid not only from the vent, but also from the mouth. The latter, however, is merely an accidental discharge after death, resulting from a crop freshly replete with juicy leaves. Its real weapon of defence is its protective coloration. The upper parts are destitute of any mark that can attract attention; the colours so perfectly harmonise with the surfaces on which the bird habitually rests, that whether squatting on yellow *pat* or amongst grey rocks, with its long neck stretched out on the ground like a sleeping camel, it is perfectly invisible. "Nature seems to have entered into a conspiracy" to cast a protective colouring over it, no matter what the surroundings. Even the piercing eye of a falcon is deceived and fails to distinguish the quarry from its squatting place, so great is the 'sympathy' between the two.[1] Once I detected a houbara, hiding in a bush, merely by catching sight of its yellow eye. It is this power of hiding that has earned for it amongst Pathans the soubriquet of 'thief'—for to a Pathan mind the word thief suggests first an idea of stealth and cunning, and not dishonesty. Once, near dusk, on an open flat plain destitute of even a blade of dry grass, I flew a pregrine at an houbara that rose at some distance. I galloped after the peregrine to a spot where she had stupidly settled on the ground and was running about and searching. Just as I stooped to take up the baffled falcon, five houbara rose as it were out of the earth around me, within a radius of two yards. When flushed quietly, the houbara will fly low for some way, but after settling, it always runs for some little distance. If a single bird be pursued by a hawk, it will perhaps join its comrades, who will then form line and charge. If its comrades are scattered, it will endeavour to make some cover intervene between it and its pursuer, and will then turn aside a little and squat. If there is a *nullah* near, it will to a certainty make for its edge. When pressed by a hawk it will fly in large circles, being loth to leave the vicinity of its comrades. If, however, after being chased to a distance, it baffles the hawk and horsemen, owing to the broken nature of the country, it will squat only for a certain time, and will then make its way back to its comrades.

Though possessed of considerable powers of flight, it only takes to the wing when forced to do so. Though houbaras often spend the day in sleep at a considerable distance from the particular field they have selected as a feeding ground, they make their visits to and fro on foot, visiting the ground towards evening and leaving it about 8 A.M. in the morning. A party of six or eight of us once sat down on an embankment to wait, and watch for one that was known to visit that particular small and solitary mustard patch, the object being to get an easy flight for a young

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[1] Blanford says that only a trained eye can detect a squatting houbara. Even a trained eye cannot detect it—unless of course the bird moves. It is quite a common thing for a chased houbara to dodge behind cover and squat, and for the falcon to settle within four or five feet and be baffled, even on bare ground.

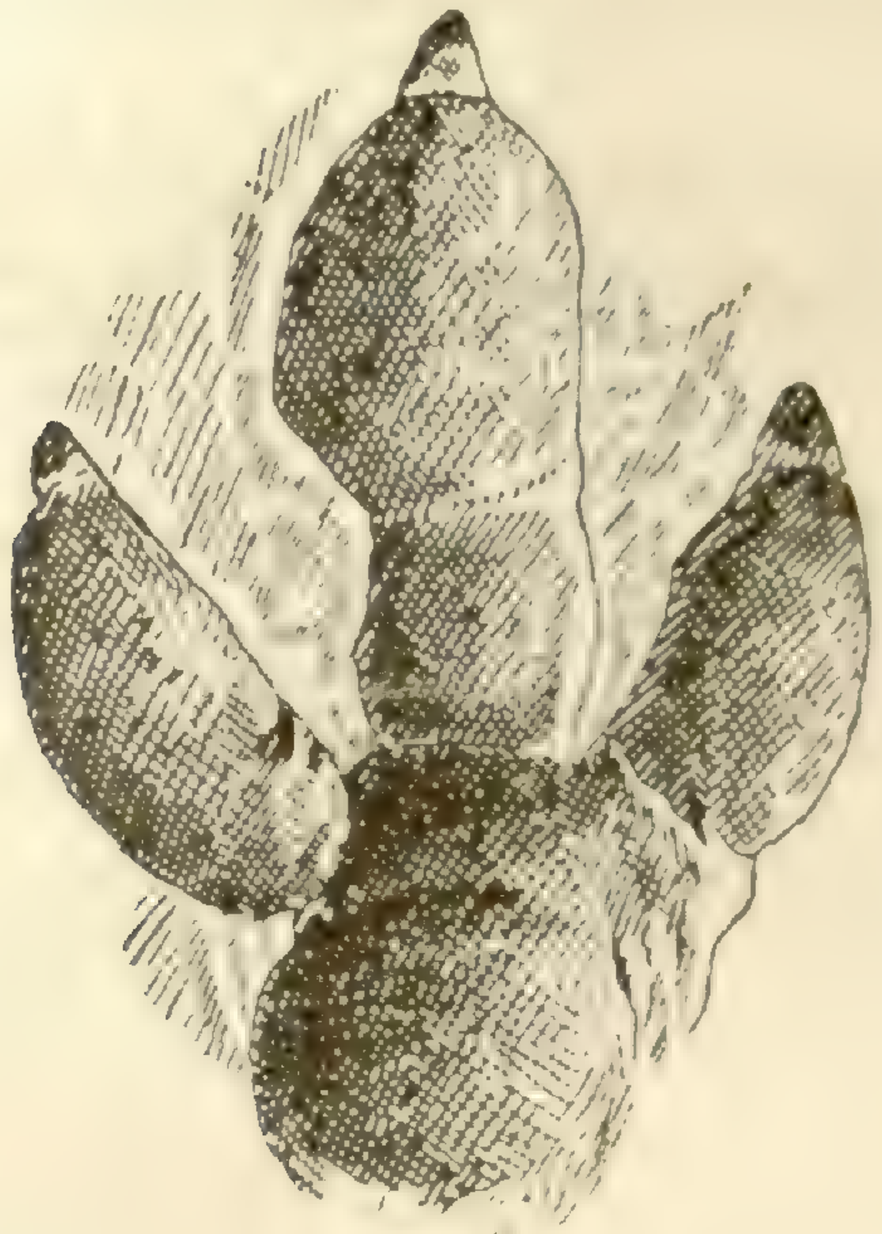
and partially trained hawk. The accustomed hour for the houbara's visit having passed, the villager who owned the plot said it would not come that evening, and suggested beating for it in a certain direction. As we remounted our ponies, the houbara surprised us by suddenly rising from the mustard. It had stolen in unperceived, having eluded the vigilance of our trained sentries.

The objection of the houbara to take wing, known to all villagers, is the chief means of its destruction. The owner of a plot of cultivation notes the direction of the foot tracks. He then lays down, along the edge of the plot, and on the side the tracks enter the cultivation, a line of bushes or twigs, a span or more in height, leaving in it a doorway of about thirteen inches wide. A stick is buried in the doorway, and to it is fastened a horse-hair noose, about five and a half inches in diameter, and made of ten or twelve twisted horse-hairs. "The houbara trips up to the obstruction and looks at it with disfavour. Then, like a lady in a messy street, who makes a circuit to reach a crossing, it turns aside and trips along the edge, till it reaches the opening, when it puts its feet in the noose and falls a victim to fastidiousness. If asked why, instead of hopping over the bushes it acted in this unnecessary manner, the silly bird would probably reply with the faulty logic not uncommon amongst humans, that 'it always did so,' and this is the only reasonable explanation of its conduct." This method of snaring is in the Punjab called *lang lagānā*. If a *lang*, arranged or disarranged, be seen near a plot, it is a sure sign that snares have been set some time or other, let the villagers swear to the contrary ever so loudly. (A little *bakhshish* will settle matters.) In Persia, instead of the line of bushes, the crop is railed in by a string, breast-high, the usual doorway being left open.

The result of all this tripping about is that the houbara leaves numerous tracks, and in the sand these retain their fresh appearance for weeks, nay for months. Rain is the only thing that obliterates them. To discriminate, the falconer must dismount and go on all fours and closely scrutinize the foot-prints. If the surface of the depression be smooth like the inside of an egg shell, the print is not more than a few hours old, but if rough as though sand had been peppered on it, the footprint is old. Even with this clue, the novice will find it no easy task to discriminate between the two. The track in the diagram is from a life-size photograph of a footprint made in clay. The only other desert footprint that a novice might mistake for an houbara's, is that of the stone-plover, but the latter is far smaller.

The houbara is hawked in the Punjab, either with the Peregrine or the *Chargh* (Falco cherrug), but chiefly with the latter. Sometimes an eagle will join in the chase and then the falcon will probably give up, but not even Bonelli's eagle is fast enough to overtake a strong houbara in a stern chase. The *Lagar* (F. jugger) has also been trained to take it, but is too slow to do anything except kill on the ground. It can also be taken by a female goshawk.

Though shy by nature, houbaras speedily get accustomed to



Life-size diagram of the footprint of an Houbara in clay.
(*From a photograph.*)

certain sounds. Once, beating in the Jhang district with a long line of beaters, five houbara were roused, but did not take wing. At the end of the line, far away, was a young peregrine I wanted to 'make.' The Zaildar said, "Shall I make them lie down?" Without understanding in the least I replied, "Yes." He began to make the peculiar grunting noise of the Afghan camel men when grazing their camels, and the houbara, no longer suspicious, at once squatted. In the Jhang district the birds will sometimes feed in a turnip patch while the owner is driving his bullock at the well. Once at dusk I flew a young peregrine at some houbaras feeding in a small turnip patch, and the hawk killed on its edge. While I was feeding her up, the frightened houbara came back out of the jungle and began to feed close to me. A quiet flight with a hawk will not make houbara desert their feeding ground, but a gunshot, or galloping about after a hawk, will drive them away, at least for many days.

It is easy to beat through a country full of houbaras, and while the sun is up to find none. They will lie close, perhaps in the open, perhaps on the shady side of a bush, and let the beaters walk over them. Some run round the line or else conceal themselves in bushes. If in the line there is a keen goshawk, the number of houbaras seen in a day will be quadrupled. When the sun declines in the late afternoon, they do not lie close; as evening draws in they are all on the move.

When a hawk is in the air, it is a matter of extreme difficulty to put up an houbara, or to get it to fly if put up. Indians (and perhaps Arabs and Persians), who care nothing for the flight but everything for the pot, prefer to hawk and kill the quarry on the

ground. The descriptions in certain books of coursing houbara with greyhounds, or riding them down, require explanation. They are doubtless somehow or other true in the letter.

The wing bones, though large, appear to be brittle. Once in a stern chase, an old 'intermewed' *chargh* that always struck with force, came up with a wet sail and struck the houbara as she overtook it. The quarry dropped with a wing completely shattered. Both birds were flying in the same direction and were in the same plane. I relate the incident as it happened: it is difficult to account for it.

59. *A Tibetan Almanac for* 1906-1907 (མེ་རྟའི་ལོ་ཕྱི།།).—*By*

Mahāmahopādhyāya Satis Chandra Vidyābhūṣaṇa, M.A., M.R.A.S.

I got a copy of a Tibetan Almanac for 1906-1907 [1] prepared by a learned Mongolian Lama living in Tibet a little to the north-east of Lhasa. It is replete with figures indicating constellations, stars, lunar mansions, auspicious and inauspicious days, etc., calculated according to the combined method of the Indian and Chinese astrologies. The Tibetans, like the Chinese, divide the year into 12 lunar months, each of which opens with the first day of the waxing moon and closes on the last day of the waning moon. As the lunar year is of less duration than the solar, an intercalary month is inserted almost every third year to make the lunar year agree with the solar. The current lunar year, which consists of only 354 days, began on the 24th February, 1906, and will terminate on the 12th February, 1907.

The author of the almanac examining the year through the Mirror of the Science of Time, makes various prognostications of which some are mentioned here. In the Tibetan Cycle of 60 years the special name for the current year is Fire-Horse, in which fire will predominate over other elements. The king of the year is Saturn, under whose malign influence meritorious people will suffer and thieves will prosper. Heavy rains will commence on the 12th July, 1906. But in the first part of the rainy season there will be scarcity of rains owing to which crops will be damaged. Fruits will be abundant, but there will be specks on them. The barley and wheat will suffer from eye-diseases. In the kingdom and in the houses of landlords, a great disorder will prevail. The rich will satisfy their hunger at the expense of the poor.

The solar eclipse that is due on the 14th January, 1907, will continue from 10-30 A.M. to 3 P.M. There will be two lunar eclipses, one on the 4th August, 1906, and the other on the 29th January, 1907, both commencing at sunset and continuing for nearly four hours.

The earth will quake thrice. The first earthquake will take place on the 12th May, 1906, the second on the 7th November, 1906, and the third on the 13th March, 1907.

The sun will commence turning towards the south on the 1st July, 1906, [2] and will return towards the north on the 30th December, 1906.

The solar and lunar days not being co-extensive with each other, some days are "cut off" (ཆད་པ), and some again are retained as "excess" or "superfluous" (ལྷག་མ་པ) in almost every month of the Tibetan year.

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[1] This copy of the Tibetan Almanac for 1906-1907 was purchased by me for Dr. E. D. Ross from a Tibetan Lama at Darjeeling in June 1906.

[2] *Vide* the note on Summer and Winter Solstices at the end.

The following are *cut-off* days :—

Preceding day.	Cut-off day.	Succeeding day.
The 21st day of the 3rd Tibetan month, corresponding to 14th May, 1906, is *Monday*.	The 22nd day of the 3rd Tibetan month.	The 23rd day of the 3rd Tibetan month, corresponding to 15th May, 1906, is *Tuesday*.
The 14th day of the 4th Tibetan month, corresponding to 6th June, 1906, is *Wednesday*.	The 15th day of the 4th Tibetan month.	The 16th day of the 4th Tibetan month, corresponding to 7th June, 1906, is *Thursday*.
The 6th day of the 5th Tibetan month, corresponding to 28th June, 1906, is *Thursday*.	The 7th day of the 5th Tibetan month.	The 8th day of the 5th Tibetan month, corresponding to 29th June, 1906, is *Friday*.
The 17th day of the 5th Tibetan month, corresponding to 9th July, 1906, is *Monday*.	The 18th day of the 5th Tibetan month.	The 19th day of the 5th Tibetan month, corresponding to 10th July, 1906, is *Tuesday*.
The 9th day of the 6th Tibetan month, corresponding to 30th July, 1906, is *Monday*.	The 10th day of the 6th Tibetan month.	The 11th day of the 6th Tibetan month, corresponding to 31st July, 1906, is *Tuesday*.
The 12th day of the 7th Tibetan month, corresponding to 31st August, 1906, is *Friday*.	The 13th day of the 7th Tibetan month.	The 14th day of the 7th Tibetan month, corresponding to 1st Sept. 1906, is *Saturday*.
The 5th day of the 8th Tibetan month, corresponding to 23rd September, 1906, is *Sunday*.	The 6th day of the 8th Tibetan month.	The 7th day of the 8th Tibetan month, corresponding to 24th Sept., 1906, is *Monday*.
The 27th day of the 8th Tibetan month, corresponding to 15th October 1906, is *Monday*.	The 28th day of the 8th Tibetan month.	The 29th day of the 8th Tibetan month, corresponding to 16th Oct., 1906, is *Tuesday*.
The 9th day of the 9th Tibetan month, corresponding to 26th October, 1906, is *Friday*.	The 10th day of the 9th Tibetan month.	The 11th day of the 9th Tibetan month, corresponding to 27th Oct., 1906, is *Saturday*.

Preceding day.	Cut-off day.	Succeeding day.
The 2nd day of the 10th Tibetan month, corresponding to 18th November, 1906, is *Sunda*.	The 3rd day of the 10th Tibetan month.	The 4th day of the 10th Tibetan month, corresponding to 19th Nov., 1906, is *Monday*.
The 26th day of the 10th Tibetan month, corresponding to 12th December 1906, is *Wednesday*.	The 27th day of the 10th Tibetan month.	The 28th day of the 10th Tibetan month, corresponding to 13th Dec., 1906, is *Thursday*.
The 1st day of the 12th Tibetan month, corresponding to 15th January, 1907, is *Tuesday*.	The 2nd day of the 12th Tibetan month.	The 3rd day of the 12th Tibetan month, corresponding to 16th Jan., 1907, is *Wednesday*.
The 25th day of the 12th Tibetan month, corresponding to 8th February, 1907, is *Friday*.	The 26th day of the 12th Tibetan month.	The 27th day of the 12th Tibetan month, corresponding to 9th Feb., 1907, is *Saturday*.
The 19th day of the 1st Tibetan month of the next year, corresponding to 4th March, 1907, is *Monday*.	The 20th day of the 1st Tibetan month of the next year.	The 21st day of the 1st Tibetan month of the next year, corresponding to 5th March, 1907, is *Tuesday*.
The 24th day of the 2nd Tibetan month of the next year, corresponding to 7th April, 1907, is *Sunday*.	The 25th day of the 2nd Tibetan month of the next year.	The 26th day of the 2nd Tibetan month of the next year, corresponding to 8th April, 1907, is *Monday*.

The following are *excess* or *superfluous* days :—

Preceding day.	Excess or superfluous day.	Succeeding day.
The 26th day of the 3rd Tibetan month, corresponding to 18th May, 1906, is *Friday*.	The 27th day of the 3rd Tibetan month, corresponding to 19th and 20th May, 1906, is *Saturday* and *Sunday*.	The 28th day of the 3rd Tibetan month, corresponding to 21st May, 1906, is *Monday*.

Preceding day.	Excess or superfluous day.	Succeeding day.
The 2nd day of the 5th Tibetan month, corresponding to 23rd June, 1906, is *Saturday*.	The 3rd day of the 5th Tibetan month, corresponding to 24th and 25th June, 1906, is *Sunday* and *Monday*.	The 4th day of the 5th Tibetan month, corresponding to 26th June, 1906, is *Tuesday*.
The 22nd day of the 5th Tibetan month, corresponding to 12th July, 1906, is *Thursday*.	The 23rd day of the 5th Tibetan month, corresponding to 13th and 14th July, 1906, is *Friday* and *Saturday*.	The 24th day of the 5th Tibetan month, corresponding to 15th July, 1906, is *Sunday*.
The 19th day of the 7th Tibetan month, corresponding to 6th September, 1906, is *Thursday*.	The 20th day of the 7th Tibetan month, corresponding to 7th and 8th Sept., 1906, is *Friday* and *Saturday*.	The 21st day of the 7th Tibetan month, corresponding to 9th Sept., 1906, is *Sunday*.
The 25th day of the 8th Tibetan month, corresponding to 12th October, 1906, is *Friday*.	The 26th day of the 8th Tibetan month, corresponding to 13th and 14th October, 1906, is *Saturday* and *Sunday*.	The 27th day of the 8th Tibetan month, corresponding to 15th Oct., 1906, is *Monday*.
The 13th day of the 9th Tibetan month, corresponding to 29th October, 1906, is *Monday*.	The 14th day of the 9th Tibetan month, corresponding to 30th and 31st Oct., 1906, is *Tuesday* and *Wednesday*.	The 15th day of the 9th Tibetan month, corresponding to 1st Nov., 1906, is *Thursday*.
The 18th day of the 10th Tibetan month, corresponding to 3rd December, 1906, is *Monday*.	The 19th day of the 10th Tibetan month, corresponding to 4th and 5th Dec., 1906, is *Tuesday* and *Wednesday*.	The 20th day of the 10th Tibetan month, corresponding to 6th Dec., 1906, is *Thursday*.
The 10th day of the 12th Tibetan month, corresponding to 23rd January, 1907, is *Wednesday*.	The 11th day of the 12th Tibetan month, corresponding to 24th and 25th Jan., 1907, is *Thursday* and *Friday*.	The 12th day of the 12th Tibetan month, corresponding to 26th Jan., 1907, is *Saturday*.
The 13th day of the 1st Tibetan month of the next year, corresponding to 25th February, 1907, is *Monday*.	The 14th day of the 1st Tibetan month of the next year, corresponding to 26th and 27th Feb., 1907, is *Tuesday* and *Wednesday*.	The 15th day of the 1st Tibetan month of the next year, corresponding to 28th Feb., 1907, is *Thursday*.

The most auspicious days for bathing (ablution) are the following :—

Tibetan Date.	Day.	Corresponding English Date.	Remarks.
The 9th day of the 3rd Tibetan month.	Wednesday.	2nd May 1906.	འབྲས་བུས་སྨིག་པ་དག། Sins will be cleansed by washing oneself on this day with water.
The 4th day of the 5th Tibetan month.	Tuesday.	26th June 1906.	འབྲས་བུས་སྨིག་དག། Sins will be cleansed by washing on this day.
The 20th day of the 9th Tibetan month.	Tuesday.	6th Nov. 1906.	འབྲས་བུས་སྨིག་དག། Sins will be cleansed by washing on this day.
The 7th day of the 11th Tibetan month.	Saturday.	22nd Dec. 1906.	འབྲས་བུས་སྨིག་དག། Sins will be cleansed by washing on this day.
The 6th day of the 1st Tibetan month of the next year.	Monday.	18th Feb. 1907.	འབྲས་བུས་ཚེ་རིང་། One will attain a long life by washing on this day.
The 8th day of the 2nd Tibetan month of the next year.	Friday.	8th March 1907.	འབྲས་བུས་སྨིག་དག། Sins will be cleansed by washing on this day.

Some of the days most auspicious for starting business are mentioned below :—

Tibetan Date.	Day.	Corresponding English Date.	Remarks.
The 17th day of the 4th Tibetan month.	Friday.	8th June 1906.	གྲུབ་འབྱོར། Accomplished.
The 20th day of the 4th Tibetan month.	Monday.	11th June 1906.	གྲུབ་སྟེར། Accomplished.
The 19th day of the 5th Tibetan month.	Monday.	9th July 1906.	གྲུབ་སྟེར། Accomplished.
The 18th day of the 8th Tibetan month.	Friday.	5th Oct. 1906	གྲུབ་སྟེར། Accomplished.
The 22nd day of the 8th Tibetan month.	Tuesday.	9th Oct 1906.	དངོས་སྒྲུབ། Successful
The 17th day of the 9th Tibetan month.	Saturday.	3rd Nov. 1906.	དངོས་སྒྲུབ་སྟེར། Successful.
The 6th day of the 11th Tibetan month.	Friday.	21st Dec. 1906.	དངོས་གྲུབ་སྟེར། Successful.
The 19th day of the 11th Tibetan month.	Thursday.	3rd Jan. 1907.	དངོས་གྲུབ་འབྱོར། Successful.
The 27th day of the 11th Tibetan month.	Friday.	11th Jan. 1907.	དངོས་གྲུབ་འབྱོར། Successful.

Tibetan Date.	Day.	Corresponding English Date.	Remarks.
The 22nd day of the 2nd Tibetan month of the next year.	Friday.	5th April 1907.	དངོས་གྲུབ་སྟོར། Successful.
The 28th day of the 2nd Tibetan month of the next year.	Wednesday.	10th April 1907.	སྒྲུབ་བྱ་ཟང་། Successful.

Some of the inauspicious days are mentioned below :—

Tibetan Date.	Day.	Corresponding English Date	Remarks.
The 4th day of the 4th Tibetan month.	Sunday.	29th May 1906.	ཆི་སྟོན། Fatal.
The 23rd day of the 4th Tibetan month.	Thursday.	14th June 1906.	ཞག་ངན། Bad day.
The 20th day of the 9th Tibetan month.	Tuesday.	6th Nov. 1906.	ངན་ཞག Bad day.
The 11th day of the 2nd Tibetan month of the next year.	Monday.	25th March 1907.	ཆི་སྟོན། Fatal.
The 27th day of the 2nd Tibetan month of the next year.	Tuesday.	9th April 1907.	སྲེག་སྟོན། Burnt.	མ་རིག་སྐར། Blind.

On the undermentioned days poisonous snakes (ཀླུ, नाग) will rise from beneath the earth causing diseases to people inhaling their breaths :—

13th May 1906; 16th May 1906; 30th May 1906; 10th June 1906; 27th June 1906; 8th July 1906; 10th August 1906; 27th August 1906; 8th October 1906; 9th October 1906; 13th October 1906; 15th October 1906; 17th October 1906; 19th October 1906; 21st October 1906; 24th October 1906; 26th October 1906; 1st November 1906; 12th November 1906; 13th November 1906; 19th December 1906; 19th January 1907; 20th January 1907; and 14th February 1907.

The Tibetan Astrology, which combines in itself the calculations of the Chinese and Indian Astrologies, has been made considerably complex by the inclusion in it of the Buddhist Metaphysics. In the Tibetan Almanac there are noted not only the auspicious and inauspicious junctures (योग སྦྱོར་) of the Indian Astrology such as Siddhiyoga (सिद्धियोग དངོས་གྲུབ་སྦྱོར་) etc., but also favourable and unfavourable prognostications are made from the Chinese diagrams (Pah-Kwah, སྤྱན་པ) such as Li (Fire), Khon (Earth), Dwa (Iron), Khen (Sky), Kham (Water), Gin (Hill), Zin (Wood), Zone (Air), and Yos̱ (Hare), H̱brug (Thunder), S̱brul (Snake), etc. Terms of the Tibetan Metaphysics are also assigned to particular days with a view to mark them as auspicious or inauspicious. Thus days are marked as མ་རིག་པ། འདུ་བྱེད། ཚོར་བ། (Avidyā, Saṃskāra, Vijñāna), etc. The influence of the Indian Astrology seems, however, to be predominant. Thus, though the first month of the Tibetan year begins in February, the Tibetan Almanac opens with the 3rd Tibetan month in April, corresponding to the first month of the Hindus.

Summer and Winter Solstices.

(དབྱར་གྱི་མཉམ་བཞུགས། དགུན་གྱི་མཉམ་བཞུགས།)

In the Tibetan Almanac under examination, the Summer Solstice is noted on the 1st July, 1906. As a matter of fact, according to the European Astronomy, the Summer Solstice falls this year on the 21st June. The works of some of the Indian Astrologers such as the Siddhānta Śiromaṇi of Bhāskarācāryya (1150 A.D.), Āryya Siddhānta of Āryya Bhaṭa (5th century A.D.), Graha-Laghava of Ganeśa Daivajña (1520 A.D.), etc., perfectly agree with the European astronomical works as to the date of the Summer Solstice falling on the 21st June.

According to the Sūryya Siddhānta (about 250 A.D.), Bhāsvatī of Satānanda (1089 A.D.), Siddhānta Rahasya of Rāghavānanda (1591 A.D.), etc., however, the Summer Solstice falls on the 23rd June. The astrological works belonging to the school of Sūryya Siddhānta are generally accepted as authoritative in India. Copies of these works were introduced into Tibet in the old days. So the Summer Solstice should have been noted on the 23rd June in the Tibetan Almanac. But this has not been done. The reason is this:

According to the school of the Sūryya Siddhānta, the date of the Solstice changes by one day at the interval of 66 years and 8 months. The Summer Solstice first commenced falling on the 23rd June in 1899 A.D. It fell on the 1st July in 1499 A D., and continued to fall on that date till 1565 A.D.

This shows that the Tibetans have not reformed their calendar since 1499 A D.–1565 A.D. They must have got their astrology from India before 1499 A D.–1565 A.D., and made necessary corrections every year up to 1499 A.D.–1565 A.D., in which years the Summer Solstice fell on the 1st July. Since 1565 A.D., they have been following the Tibetan version of the Indian Astrology but have not introduced the necessary corrections as have been done in India. This shows that the intercourse between India and Tibet in intellectual matters practically stopped about 1565 A.D.

A SPECIMEN PAGE OF THE ALMANAC.

The 3rd Tibetan month beginning with the 22nd April, 1906.

Post-script.

While the foregoing notice of the Tibetan Almanac of the Fire-Horse year (1906-07) was passing through the Press, Mr. E. H. C. Walsh, Commissioner of the Burdwan Division, very kindly sent me a copy of the standard almanac of Tibet of the Water-Hare year (1903-04), which he had been using during the late Tibet expedition and which on its first and second pages contains the following Tibetan verse (of salutation) :—

ཀུན་ཆེན་ཐུགས་བསྐྱེད་གསེར་གྱི་འཛེོན་མ་ལས ॥
མངོན་འཕགས་བསྟུ་བ་རྣམ་བཞིའི་བང་རིམ་ཆུན ॥
ཆོས་གཉིགས་ཉི་ཟླ་རྒྱང་རྒྱང་གིས་ལེགས་འཁྲུད་པའི ॥
ཐུབ་དབང་རིན་ཆེན་རྒྱུན་པར་ཞུགས་བགྱིར ॥

" I salute the Sumeru-like King of sages, the heart-exalter, the goldenly sublime over this earth, the transcender of the four main stages, who is well embraced by that Incarnate Pair of Righteousness, *viz.*, the Sun and the Moon."

Side by side with the Tibetan lines there are also four Sanskrit lines written both in Lantsha and Tibetan characters, and evidently composed by the Sanskrit-knowing Lama employed under the Lhasa Government, which were inserted as the Sanskrit equivalents of the Tibetan lines and run as follows :—

व्यूढस्कन्धपागोत्र सुवर्णभूमि
आर्य्यसमाजं विचतुःक्रमं वा ।
धर्म्माङ्गसूर्य्येन्दुयगं सुलीनम्
नम्रः प्रणे मौन-ईशं सुमेरुम् ॥

As the Sanskrit verse composed by the Lama seems not to be quite accurate, I append a Sanskrit translation of the Tibetan lines as follows :—

प्रथितचित्तोत्पादं सुवर्णधराया अभ्युद्गतं
समासविचतुरसोपानं धर्म्ममूर्त्तिसूर्य्येन्दुयुगलस्वालिङ्गितं
मुनीन्द्रसुमेरुं नमामि ॥

or

अभ्युद्गतं प्रख्यितचित्तपादं
हैम्या धरायां मुनीन्द्रसुमेरुम् ।

चन्द्रसूर्य्यधर्म्ममूर्त्तिलिङ्कितं
नमामि संक्षेपचतुःसोपानम् ॥

or

उपजातिः ।

अभ्युद्गतं हैमभुवो मुनीन्द्रं
स्वर्णाद्रिवत् प्रस्थितचित्तपादम् ।
धर्म्मार्द्रतिग्मद्युसुधांशुवेष्टं
नमामि संक्षेपचतुःक्रमञ्च ॥

N.B.—The Tibetan verse, as well as its Sanskrit translation, is an instance of "double meanings," the epithets in the verse being applicable to both Buddha and Sumeru.

ཕུར་ཚེགས་ཐུགས་བསྐྱེད་—as applied to Buddha signifies "one who has attained the highest purity of heart"; as applied to Sumeru: "producing expansion or exaltation of the heart."

མངོན་འཕགས་—1. rising above the earthly or rotatory existence; 2. a golden mass rising high over the earth.

བང་རིམ་—1. the four stages of perfection, viz., *srotāpatti*, *sakṛdāgāmi*, *ānāgāmi* and *arhattva*; 2. four steps of ascent.

ཐུབ་དབང་—foremost of sages, that is Buddha.

རིན་ཚེན་འབྱུང་པོ་—a fabulous golden mountain in the north (Sumeru).

PRINCIPAL PUBLICATIONS OF THE SOCIETY.

Asiatic Researches, Vols. I—XX and Index, 1788—1839.
Proceedings, 1865—1904 (now amalgamated with Journal).
Memoirs, Vol. 1, *etc.*, 1905, *etc.*
Journal, Vols. 1—73, 1832—1904.
Journal and Proceedings [*N. S.*], Vol. 1, *etc.*, 1905, *etc.*
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(*b*) To propose and second candidates for Ordinary Membership.

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(*e*) To take out books, plates and manuscripts from the Library.

(*f*) To receive *gratis*, copies of the *Journal and Proceedings* and *Memoirs* of the Society.

(*g*) To fill any office in the Society on being duly elected thereto.

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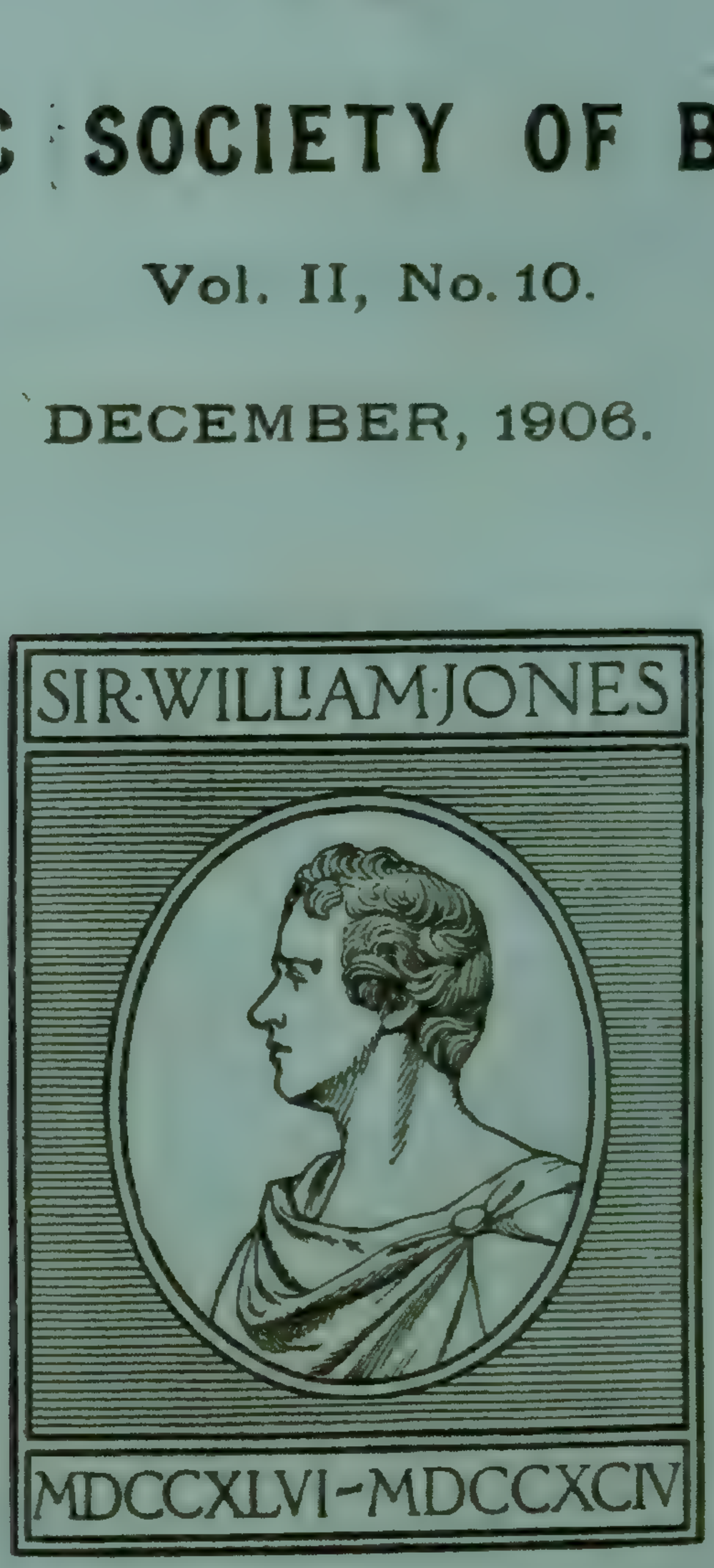

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List of Officers and Members of Council

OF THE

ASIATIC SOCIETY OF BENGAL

For the year 1906.

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DECEMBER, 1906.

The Monthly General Meeting of the Society was held on Wednesday, the 5th December, 1906, at 9-15 P.M.

The HON'BLE MR. JUSTICE ASUTOSH MUKHOPADHYAYA, M.A., D.L., Vice-President, in the chair.

The following members were present:—

Dr. N. Annandale, Raja Ram Chandra Bhanj, Mr. F. B. Bradley-Birt, Mr. I. H. Burkill, Mr. R. Burn, Rai Sarat Chandra Das Bahadur, Babu Amulya Charan Ghosh Vidyabhusan, Mr. H. G. Graves, Mr. H. H. Hayden, Mr. D. Hooper, Mr. W. W. Hornell, Dr. W. C. Hossack, Mr. C. Little, Dr. M. M. Masoom, Mr. R. D. Mehta, C.I.E., Capt. W. F. O'Connor, R.A., Lieut.-Col. D. C. Phillott, Major L. Rogers, I.M.S., Pandit Yogesa Chandra Sastri-Sankya-ratna-Vedatirtha, Mr. R. R. Simpson, Babu Chandra Narain Singh, Mr. H. E. Stapleton, Mahamahopadhyaya Satis Chandra Vidyabhusana, Mr. E. Vredenburg, Rev. E. C. Woodley.

Visitors :—Mr. E. C. H. Cresswell, Babu P. K. Das, Mr. H. C. Jones, S. Naseer Hosain Khan, Babu Dwijendra Narain Ray, Babu Purnendra Narain Singh, and others.

The minutes of the last meeting were read and confirmed.

Seventy-three presentations were announced.

In accordance with Council order, the General Secretary read the following report submitted by the Delegates to the Aberdeen University's 400th Anniversary on behalf of the Society.

"Your Delegates to the Aberdeen University on the occasion of its recent Quartercentenary Celebrations have the pleasure to submit a short report of their mission. They do not propose to describe the Festival, as they understand that the official Publications Committee of the University intends to present Books of the proceedings to all the bodies that sent representatives.

The Celebrations, which extended over four days—September 25th-28th—of exquisite weather, were begun by a service in one of the two constituent colleges of the University (King's College) and were ended by an evening Reception in the other (Marischal College). During the entire week the City was *en fête*.

In the afternoon of the FIRST DAY, the Delegates, upwards of 240 in number, and representing the Universities, Colleges, and chief Learned Societies of the United Kingdom, as well as the principal Universities and Academies of the British Possessions, and those of America, Austro-Hungary, Belgium, Denmark, France, Germany, Holland, Italy, Japan, Norway, Russia, Sweden,

and Switzerland, were received by the Chancellor and great officers of the University and formally presented the addresses of congratulation with which they were entrusted. This was one of the biggest functions of the four days, and was so managed that the whole population of Aberdeen might see something of it; for the members of the University (among them a most charming band of more than a hundred girl undergraduates), together with the special Guests of the University, the Delegates, the Magistrates and the Town Council, all arrayed like King Solomon in all their academic or civic glory, marched in procession through some of the streets of the city to the place appointed for the Delegates' reception. The place of reception was a temporary hall, specially constructed at the charges of the Chancellor, Lord Strathcona, and capable of accommodating 4,000 people. The dais of the hall was occupied by the senior members of the University and the special Guests and Delegates: the body of the hall was filled by the invited public.

The Delegates from the United Kingdom were the first to be received; after them came those from the Colonies and India, and then those from foreign countries in alphabetical order. As the Delegates of each country were announced the whole assembly stood up while a band played the appropriate national anthem or air.

The addresses were presented to the Chancellor unread: indeed, it would have been impossible to read them, for the mere formality of presenting them engaged the greater part of the afternoon: but a selected delegate of each country or group of countries delivered a short speech in behalf of his colleagues. In this procedure, the delegates from all the British Dominions beyond the seas, India included, were represented by Principal Peterson of the University of Montreal and were attuned to the national air of Canada.

The addresses, however, were afterwards publicly displayed in one of the museums of Marischal College, and were one of the chief attractions of the Reception that brought the celebrations to an end.

Some of the addresses were real works of art, upon which considerable time, thought, money, and in some cases scholarship, must have been spent. Ours was not, by a long way, one of the most attractive, though it was by no means one of the plainest.

After this great reception, the Delegates were entertained at a banquet given, in one of the public halls of the city, by the Lord Provost, Magistrates, and Town Council.

In the morning of the Second Day honorary degrees were conferred upon 122 distinguished guests. Among those thus honoured were Sir John Jardine, K.C.I.E., M.P., the delegate from Bombay University, and Mr. John Sime, C.I.E., who represented the Punjab University, as well as on Professor Kielhorn of Göttingen, who is one of our Honorary Members, Major Ronald

Ross, C.B., F R.S., late of the Indian Medical Service, and Professor C. R. Lanman, professor of Sanskrit at Harvard.

In the afternoon of the same day there was a Reception by the University at King's College, and in the evening another public Reception at the Art Gallery.

The THIRD DAY was *the* day of the celebrations, when the new buildings at Marischal College were formally opened by the King, who was accompanied by the Queen. The weather was truly imperial, and all the eminence of Scotland—academic, civic, political—and all the adorned beauty of Aberdeen, were present.

In the evening a banquet, almost comparable in magnitude with the feeding of the multitude in the wilderness—for the number of the guests amounted to 2,400—was given by the Chancellor, Lord Strathcona, to all the graduates, guests, and delegates. Many of the guests wore their academic robes; nor did any one lack anything of the equal feast.

The principal function of the FOURTH DAY was the evening Reception at Marischal College, at which upwards of 4,000 guests were present, and doctors' robes of many colours were displayed to soft Lydian airs and the powerful strains of the national instrument of Scotland.

Your Delegates came away with vivid impressions of the wonderfully perfect management of the long series of ceremonies, and of the splendid hospitality shown to all the guests and delegates both by the University and by the city."

A. ALCOCK.

18*th October*, 1906. GEORGE A. GRIERSON.

The Chairman announced that Dr. E. D. Ross having returned to Calcutta had taken over charge of the duties of Philological Secretary from Mahamahopadhyaya Haraprasad Sastri.

Lieut. J. C. More, 51st Sikhs, F.F., Bannu, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Mr. R. J. Hirst*, Assistant Superintendent, Bengal Police, Calcutta, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N Annandale; *Captain S. Morton*, 24th Punjabis, Dilkusha, Lucknow, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Diwan Tek Chand*, B.A., M.R.A.S., I.C.S., Deputy Commissioner, Ludhiana, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale; *Mr. H. C. Norman*, Professor of English, Queen's College, Benares, proposed by Lieut.-Col. D. C. Phillott. seconded by Mr. H. E. Stapleton; *Mr. Henry Sharp*, Director of Public Instruction, Eastern Bengal and Assam, Shillong. proposed by Mr. H. E. Stapleton, seconded by Lieut.-Col. D. C. Phillott; *Mr. G. R. Kaye*, Bureau Assistant to the Director-General of Education, Simla, proposed by Dr. E. D. Ross, seconded by Mr. R. Burn; *Captain C. L. Peart*, 106th Hazara Pioneers, Quetta, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annan-

dale ; *Captain Claude B. Stokes*, 3rd Skinner's Horse, Deolali, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale ; *Leiut. G. Harris*, 56th Infantry, F.F., proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. Annandale ; *Major F. O'Kinealy*, I.M.S., Civil Surgeon, Darjeeling, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S ; *Mr. Arthur William Dentith*, I.C.S., Assistant Comptroller, India Treasuries, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale ; *Major W. Donnan*, I.A., Examiner, Ordnance and Factory Accounts, Calcutta, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale ; *Mr. J. C. Jack*, I.C.S., Joint Magistrate, Backergunge, proposed by Mr. H. E. Stapleton, seconded by Lieut -Col. D. C. Phillott ; *Dr. Adrian Caddy*, M.D., M.B., B.S. (London), F.R.C.S. (Eng.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H., Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Dr. Arnold Caddy ; *Dr. H. Finck*, M.D., Surgeon to the Consulate-General for Germany, proposed by Major L. Rogers, I.M.S., seconded by Major F. P. Maynard, I.M.S. ; *Professor S. C. Mahalanabis*, proposed by Mr. J. A. Cunningham, seconded by Dr. N. Annandale ; *Major B. H. Deare*, D.P.H., I.M.S., Civil Surgeon, Patna, proposed by Major L. Rogers, I.M.S., seconded by Major W. J. Buchanan, I.M.S. ; *Captain H. B. Foster*, I.M.S., Eden Hospital, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Captain J. W. Megaw, I.M.S. ; *Captain J. C. Holditch Leicester*, M.D., F.R C.S., M.R.C.P., I.M S., General Hospital, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Captain J. G. Murray, I.M.S. ; Major *W. J. Hayward*, M.B., I.M.S., Police Surgeon, Calcutta, proposed by Major L. Rogers, I.M.S., seconded by Dr. W. C. Hossack ; *Captain Harvey*, R.A.M.C., Station Hospital, Calcutta, proposed by Major L. Rogers, seconded by Major F. P. Maynard, I.M.S. ; and *Captain C. C. R. Murphy*, The Suffolk Regiment, proposed by Lieut.-Col. D. C. Phillott, seconded by Dr. N. Annandale ; were balloted for as Ordinary Members.

Mr. D. Hooper exhibited some primitive candles made from the seeds of *Myristica canarica*, one of the wild nutmegs of Southern India. The tree is found in South Kanara, Malabar and Travancore. The seeds, which contain half their weight of fat, are beaten into a paste and pressed into the hollows of small bamboo stems, and then heated over a fire. The black candles, moulded in this peculiar fashion, are removed and used for illuminating purposes by villagers. The fat of the seeds consists mainly of myristicin, is readily saponifiable, and warrants a wider commercial application.

On behalf of Mr. J. W. Ryan, Manager of the Government Rubber Plantations at Mergui, the Natural History Secretary exhibited a photograph of a prostrate but vigorously growing tree of *Hevea brasiliensis*, the Para rubber tree. The purpose of the exhibit was to illustrate the vitality of this species.

The following papers were read :—

1. *A list of* 124 *new words, chiefly European, that constantly occur in modern Persian Newspapers; collected from the newspapers of the past six months.—By* Muhammad Kazim Shirazi, *Persian Instructor to the Board of Examiners. Communicated by* Lt.-Col. D. C. Phillott.

This paper will be published in a subsequent number of the *Journal.*

2. *Salima Sultan Begam.—By* H. Beveridge.

3. *The Paladins of the Kesar Saga. A collection of Sagas from Lower Ladakh Tale No. III.—By* Rev. A. H Francke.

This paper will be published in a subsequent number of the *Journal.*

4. *Note on the Common Kestril* (Tinnunculus alaudarius).—*By* Lt.-Col. D. C. Phillott.

5. *Note on the Lager Falcon* (Falco jugger).—*By* Lt.-Col. D. C. Phillott.

6. *A note on Swertia tongluensis and on a new variety of Swertia purpurascens.—By* I. H. Burkill.

These papers will be published in a subsequent number of the *Journal.*

7. *A Chapter on Hunting Dogs, being an extract from the Kitāb^{w}l-Bazyarah, a treatise on Falconry, by Ibn Kushājim, an Arab writer of the Tenth Century.—By* Lt.-Col. D. C. Phillott and Mr. R. F. Azoo.

8. *Note on a specimen of Felis tristis, Milne-Edwards, in the Indian Museum.—By* N. Annandale.

9. *Notes on Indian Mathematics.—By* G. R. Kaye. *Communicated by* Dr. E. D. Ross.

These papers will be published in a subsequent number of the *Journal.*

10. *Miniature Tank Worship in Bengal.—Compiled by* A. N. Moberly, I.C.S., *Superintendent of Ethnography, Bengal. Communicated by the Anthropological Secretary.*

11. *The Saorias of the Rajmahal Hills.—By* R. Bainbridge. *Communicated by the Anthropological Secretary.*

This paper will be published in the *Memoirs.*

12. *Notes on the Freshwater Fauna of India, No. XI. The Occurrence of the Medusa,* Irene ceylonensis, *in Brackish Pools, together with its Hydroid stage.—By* N. Annandale.

13. *Notes on the Freshwater Fauna of India, No. XII. A Preliminary note on the Polyzoa occurring in Indian Fresh and Brackish Pools, with the description of a new Lophopus.—By* N. Annandale.

14. *Notices of Orissa in the Early Records of Tibet.*—*By* Rai Sarat Chandra Das, Bahadur.

These papers will be published in a subsequent number of the *Journal.*

The Second Meeting of the Medical Section of the Society was held on Wednesday, the 14th November, 1906, at 9-15 P.M.

Major W. J. Buchanan, I.M.S., in the chair.

The following members were present :—

Major E. H. Brown, I.M.S., Dr. A. Caddy, Captain F. P. Connor, I.M.S., Lt.-Col. F. J. Drury, I.M.S., Dr. W. C. Hossack, Dr. W. W. Kennedy, Captain D. McCay, I.M.S., Captain J W. D. Megaw, I.M.S., Major D. M. Moir, I.M.S., Major J. Mulvany, I.M.S., Captain J. G. P. Murray, I.M.S., Captain J. J. Urwin, I.M.S., and Major F. P. Maynard, I.M.S., Honorary Secretary.

Visitors :—Capt. J. A. Black, Dr. Adrian Caddy, Capt. Harvey, R.A.M.C., Capt. J. C. H. Leicester, Major F. O'Kinealy, I.M.S., and Dr. J. B. Phillippe.

The minutes of the last meeting were read and confirmed.

Major D. M. Moir showed some clinical cases.

Captain J. W. D. Megaw read a paper on "A Year's Experience of Malaria at the Medical College Out-patient Dispensary."

Major L. Rogers showed some lantern slides illustrating the short fevers of Calcutta.

The discussion on the last paper to be continued at the next meeting.

With a vote of thanks to the chair the meeting terminated.

60. *The Paladins of the Kesar Saga. A Collection of Sagas from Lower Ladakh.*—*By* A. H. Francke.

PREFACE.

The following tales, which I call "Sagas of the Paladins of the Kesar-saga" were dictated slowly by the same man who dictated the "Lower Ladakhi Version of the Kesar-saga," and were written down by the Munshi of Khalatse, *Yeshes rig 'adzin*. The sagas contained in the present collection are not considered by the people to be of the same importance as the Kesar-saga proper; but they are interesting enough to the European student of Tibetan folklore as throwing new light on the Kesar-saga. According to my conception, the present sagas constitute parallels to the Kesar-saga, as were told in side-valleys. Some of the Agus appearing in them look exactly like Kesar himself under a new name. When these tales were united with the principal saga, Kesar under a different name (*i.e.*, the Agu) had to become a son or servant of Kesar under his own name. In the first of the tales, however, we find Kesar under his own name, and the tale reminds us in many parts decidedly of Kesar-saga, Tale No. V, Kesar's defeat of the giant of the North.

TALE No. I.

The Tale of Kesar's Beloved Mon.

Abstract of Contents.

Kesar had a Mon (low-caste man) whom he loved more than anybody else. The Agus became jealous and killed the Mon on the occasion of a hunting party which they had undertaken in his company, by pushing him from a high rock. Kesar went to find him and heard a voice speaking out of his corpse. Therefore he opened the Mon's belly with a knife, and out of the corpse came two Mons, a male and a female one which he carried home in his loin cloth. Both were some sort of devils who required a great amount of food. At first the Agus had to feed them, but when their supplies were finished, the Mon-devils were entrusted to grandfather *rTse dgu*. This old hermit gave them much work and little food. Once they found a lump of gold and a turquoise of the size of a hearth-stone. These treasures they presented to the hermit, asking him to increase their food and give them less work. He, however, did the opposite, as he was of opinion that they would find him more treasures if he was hard on them. Then the two devils fled to a poisonous lake in which they bathed, with the result that their appearance became perfectly diabolic. One of their teeth grew down to the earth and another up to the sky, and they received locks of blood-red colour. They attacked

the hermit in his house, but Kesar was sent to rescue him. When they had told their tale to Kesar, the latter advised them erroneously to go to the land of the Nâgas and devour its inhabitants. This was a slip of the tongue, for he had intended to send them to the land of the devil. When the misery of the Nâgas became very great, they were advised by their sorcerers to send two of their ladies, *Daryyi yang mdzesma*, and *Daryyi mthong mdzesma*, to Kesar, to ask him to come to their assistance. These two Nâginî went towards the land of *gLing* and put up 100 black and 100 white tents. First of all, Agu *Khrai mgo khrai thung* was sent against them. The ladies took the shape of bears, and the Agu ran away before them, wounding his horse with his own sword in his fright. Then Agu *dPalle* was sent, but he also fled before the bears. Still he found out that they were females. Therefore he gave the advice that *a'Bruguma* ought to be sent to the tents. She was well accepted and asked by the Nâginî to send King Kesar to them for some time. Kesar agreed to that, saying that *'aBruguma* would probably repent her promise. Then *'aBruguma* was ordered to fetch Kesar's horse from the cold (or straight) valley. But the horse behaved awkwardly and would not come. By throwing a stone at it with a sling, she succeeded after all in mounting it. But then the horse went off in the most extraordinary way, carrying her up to the sky, and then dragging her along mountain ridges, *'aBruguma* spending most of the time below the belly of the horse, with the result that, when they arrived after all in the stable, the back of the horse was sore. Then *'aBruguma* went to her father and mother, angry. Kesar healed the horse with the medicines which were always ready for use in the horse's ear, and took *'aBruguma* back to the castle. There she had to clean all the harnesses and other armature which Kesar intended to take along with him on his expedition.[1] Then *'aBruguma* sang a song in which Kesar is praised as a being from whom light, dew, and flowers proceed. Kesar answered with a song in which he said that, although leaving as a young man, he would return as an old man. Kesar was led by a fox to the land of the Nâgas. He punished the two Mon-devils and sent them to the land of the devil to eat there all the poisonous snakes. Then he played at dice with the brother of the two Nâginî, *Yang mdze ma* and *mThong mdzesma*. Thus nine years elapsed. But then the Nâga had a difference with Kesar and called him, "Forgetter of *gLing*." That very night Kesar saw his horse in his dream He went to look after him the next day and found him after a long time. The horse advised him not to accept the food which was to be offered to him by the Nâginî, as it was poisonous, and they rode off in the direction of *gLing*. Two days before arriving there, Kesar took the shape of a wolf, and soon met with Agu *dPalle* who had taken the shape of a sheep. But the latter recognized Kesar and blamed him for not hurrying home, as *bKā blon ldanpa*

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[1] There is a very similar passage to this in Kesar-saga, Tale No. V, Kesar's victory over the giant of the North, Bibliotheca Indica.

had taken possession of the castle of *gLing* and *'aBruguma*, and killed Agu *mDa dpon gongma*. Therefore Kesar took the shape of a begging monk and went to the *gLing* castle to ask alms. He told *'aBruguma* that he had heard news of Kesar's death in the land of the Nâgas. *'aBruguma* liked that news and gave him a little room to sleep in. At night Kesar surprised *'aBruguma* in the company of *bKā blon ldanpa*. The latter was suspended in a cage, but released when he made over his property to Kesar. Also *'aBruguma* was forgiven and re-accepted.

Vocabulary of the New Words and Names.

མན་ཚད། *man thsad* or *ma thsadde*, 'the measure not being full'; 'not enough with this.'

ཁོང་སུ། *khongsu*, or *khokungyi su*, one among them.

བློ་སྟེ། *lboste*, blown up, filled with air or gases.

ནམ་བག། *nambag*, the upper part of the coat, above the girdle, which is used as a pocket.

བྲག་སྟེ། *bragste*, perfect tense of modern *'abregpa*, 'cut off' (the limbs of killed animals).

གྲོ་ཀོ་ངོ། *grokoro*, dumplings.

སྐུམ་ཅས། *skumcas*, take off, diminish.

རྒྱེད་ཅས། *skyedcas*, make more, increase.

རྡུང་གི་ལུང་པ། *dranggi lungpa*, instead of *granggi lungpa*, means 'straight valley.'

ཆ་སོ། *chaso*, long tooth.

ཁ་ནོར་ལ། *kha norla*, making a mistake in his speech, a slip of the tongue.

སང་སང་ལྷ་འབྲོག *sang sang lha 'abrog*, name of an outlying field.

ཞོ། *zho*, not only $\frac{2}{3}$ Rupees as is stated in the dictionaries, but 12 annas × 6, or $4\frac{1}{2}$ Rupees.

རྩ་གོར། *rtsva gor*, ear of grass.

སྙོག་ཅས། *snyogcas*, trample down (of grass).

ཁ་ཤུལ་བཏང་ཅས། *kha shul btangcas*, rinse the mouth.

དྲེན་མོ། *drenmo*, the same as *dredmo*, female bear.

ལྟག་དཀར། *ltag dkar*, white neck, of animals.

ཕོང་། *phong*, the same as *phabong*, rock.

ཁར་ཁར་བཏང་ངེས། *khar khar btangces*, sharpen (a knife, sword).

སྡུག་པོ། *sdugpo*, unhappy.

ཞིམ་ཟག། *zhimzag*, sweet-meat.

ཤི་ལང་། *shilang*, dung.

ཆར་མ། *charma*, a small stone which is broken from a rock.

ཁྱེལ་ཅས། *khyelcas*, mount a horse.

ལྦོ་ཡོལ་མ། *lbo yogla*, underneath a horse, on its stomach.

རྩ་ཀུ། *rtsaku*, small knife.

ཨམ་བི་དི་ཕྲུ་ལུ། *ambiti phrulu*, name of a fruit.

ཞུར་ལེ། *zhurle*, the dress of the horse from saddle to tail.

བན་འདུམ། *bun 'adum*, said to mean 'silk.'

པད་ཀ། *padka*, the same as *padma*, lotus-flower.

ཀོ་ཤམ་སི། *koshamsi*, leather boots.

སྙིང་འབྲང་ཅས། *snying 'abrangcas*, 'the heart is following,' to become excited.

རྣམ་ཙར། *rnam tsar*, respectful for *tsadar*, loin-cloth, girdle.

ཉི་རྩེ། *nyi rtse*, 'sun-summit,' the lustre of icy peaks.

སྒར་སྒུ་རེ། *sgara sgure*, very old.

སྒང་ར། *sgang ra*, beard, *ra* stands for *skra*.

རྩུག་རྣ་རིན་ཆེན། *rtsug rna rinchen*, name of a Nàga.

གསང་རབས། *γsang rabs*, food given to monks.

ཆར་ལ་བཏང་ཅས། *charla btangcas*, hang up. suspend.

སེམས་འདྲི་སྟེ། *sems 'adriste* (*'adriste* stands probably for *'abriste*). conciliated.

ང་དང། *ngatang* } we. Of the two words for 'we,' *ngatang* is used inclusive, and *ngazha* exclusive of the addressed person.
ངཞ། *ngazha*

།། ཀེ་སར་གྱི་མོན་གཅིས་པའི་སྐྱུངས་ཡིན །།

ཡོད་ཚུག་ལོ། གླིང་རྒྱལ་ལྷམ་ཀེ་སར་ལ་མོན་གཅིས་པ་ཞིག་ཡོད་ཚུག། ཀེ་སར་གྱིས་དེ་མོན་པོ་ཚང་མའི་སང་རིན་ཅན་བཅོ་སྟེ། ཚང་མའི་མགོ་ལ་བོར་རད་ཚུག་པས། ཟས་ཡང་ཞིམ་པོ་བཏངས། གོས་ཡང་ལེགས་པོ་སྐོན་ས་པ་སང། མན་ཚད། རྒྱལ་པོ་ཁྲི་རང་གི་ཡོག་ལ་མོན་དེ་བོར་ས་པས། ཁོ་འི་ཡོག་ལ་གླིང་པའི་དཔའ་བོ་ཚང་མ་བོར་རད་ཚུག། དཔའ་བོ་ཚང་མ་ལ་སྒོ་ཡོང་སྟེ་གྲབས་ཤིག་བཅོ་སྟེ་ཟེརས། ང་དང་དཔའ་བོ་ཚང་མའི་མགོ་ལ་ཁོས་མོན་རིགས་ངན་དེ་བོར་འདུག། ཁོ་ལ་ང་དང་གིས་ཅི་བཅོ་ཡིན་ཟེརས་པ། གཅིག་གིས། ང་དང་དང་མཉམ་པོ་རི་ཞིག་ལ་ཤིངས་ལ་ཁྲིར་ཡིན། དེ་ནས་བྲག་མཐོན་པོ་ཞིག་གི་མགོ་ནས་ཐུར་ལ་ཕངས་བཏང་ཡིན་ཟེར་ནས་ཁོང་ཁ་འཆམས་སོ། དེ་ནས་དཔའ་བོ་ཚང་མས་ཀེ་སར་རྒྱལ་པོ་ལ་ཞུས་པ། རྒྱལ་པོ་ལེ། ང་ཞ་ཚང་མ་ཆོན་ལ་འདིར་ལུས་འདུག། ཉི་རང་གི་མོན་གཅིས་པ་ང་ཞ་དང་མཉམ་པོ་ཤིངས་དཔོན་ལ་སྐུལ། ང་ཞ་ཚང་མ་ཤིངས་ལ་ཆེན་ལེ་ཟེརས་པ། ཀེ་སར་གྱིས

རྒྱལ་ཐེར་དེ་མོན་གཅིས་པ་ལིངས་དཔོན་བཅོ་སྟེ། དཔའ་བོ་ཀུན་དང་
མཉམ་པོ་རི་ལ་བདངས། དེ་ནས་དཔའ་བོ་ཚང་མ་རི་མགྲོན་པོ་ཞིག་ལ་
སོང་སྟེ། དེ་རུ་བྲག་མགྲོན་བོ་ཞིག་ཡོད་ཚུག་པ། མོན་གཅིས་པ་དེ་ཐུས་
སྟེ། དེའི་བྲག་ནས་ཐུར་ལ་ཕངས་བདངས། དེ་ནས་ཁོང་ཚང་མ་ཕྱིར་
ལོག་སྟེ་གླིང་མཁར་དུ་རྒྱལ་པོ་བོ་འི་རུར་བསླེབ་སོ། རྒྱལ་པོས་མོན་
གཅིས་པ་གར་སོང་ཐེརས་པ། ཁོང་སུས་ཐེརས། རི་དྭགས་ཀང་ཕྱུག་
ཅིག་ལ་ཧ་སྟེ་སོང་ཐེརས། སུས་སྟོན་ལ་སོང་པིན་ཐེརས། སུས་དེང་ན་
ཡོང་ངེད་ཐེརས། ཁོང་གི་ཁ་མ་འཆམས་པ་སང། རྒྱལ་པོ་ཀེ་སར་གྱིས་
བསམ། འདི་མི་ཀུན་གྱི་ཁ་མ་འཆམས། ཁོ་བསད་མཁན་ཡིན་འགྲོ་
བསམ་སྟེ། རྒྱལ་པོ་ཀེ་སར་རི་ལ་ལྟ་ལ་སོང་བས། དེ་རི་མགྲོན་པོ་འི་རུ་
ལ་བསླེབ་པ། མོན་གཅིས་པ་དེ་རུ་ལྷྲིས་དེ་ན། ཤི་སྟེ་ཡོད་ཚུག་པ།
གྲོད་པའི་ནང་ནས་སྐད་ཅིག་བདང་ངེན་ཞིག་ཡོད་ཚུག་པ། ཀེ་སར་གྱིས་
ངའི་མོན་གཅིས་པ་འདིར་ཤི་སོང་། ད་ཁོ་འི་ཚབས་ཤིག་འདི་གྲོད་པའི་
ནང་ནས་བིང་ཤིག་ཐེར་དེ། གྲི་གུ་སོར་གསུམ་དང་གྲོད་པ་ཤགས་
བདངས་པ། གྲོད་པའི་ནང་ནས་མོན་པ་མོན་སྲིང་གཉིས་བིང་སྟེ་ཡོངས་སོ།
ཀེ་སར་ཐད་ཀྱིན་ཞིག། གཉིས་ཀ་ནམ་བག་ནང་དུ་འཁུར་དེ་མཁར་ལ་
བསླེབ་སོ། དེ་གཉིས་ཀ་བདུད་རི་ཡིན་ཚུག་པས། གཉིས་ཀས་ཟེས་དེ་
མི་གྲངས་མཁན་རི་ལ་འགྲུར་སོང་ནས། གླིང་མཁར་གྱི་ཟན་ཕྱིད་ཟམ་
ཁོང་གིས་ཟོ་ཚར། དེ་ནས་གླིང་པའི་དཔའ་བོ་ཚང་མ་ལ་གསོ་རིས་ལ་
བདང་སོང་། དེའི་དེང་ནས་དཔའ་བོ་ཚང་མ་ལ་ཨང་ཟན་མེད་མཁན་ལ་
གྱུར་སོང་། ཁོང་གིས་གྲབས་བཅོ་སྟེ། མེ་མེ་སློབ་དཔོན་རྩེ་དགུ་ལ་གསོ་

བ་ལ་འཁྱེར་ན་རྒྱལ་ཟེར་དེ། མི་མིའི་རྟར་ཧྲིརས། མི་མེས་འདི་ཐུག་བཙོས། མོན་བ་ལ་ཞག་གཅིག་ལ་ར་མ་བརྒྱ་བྲག་སྟེ། རི་བོ་ཁལ་དེ་ཕད་བརྒྱ་ཐག་བཙུག་སྟེ། ཡང་ཤིང་ཁུར་བརྒྱ་ཟམ་འཁྱོང་ཅས་དེ་ལས་ལ་བསྐོས། ཟན་དེ་ཉི་མ་ལ་གྲོ་ཀོ་རོ་བརྒྱ་བཙོས། མོན་སྤྱིང་ལ་ཞག་རེ་ལ། ལུག་བརྒྱ་བྲག་སྟེ་ཁལ་དེ་སྣམ་བུ་བརྒྱ་ཐག་བཙུགས། ཆུ་ཆུ་དཀར་བརྒྱ་འཁྱོང་བཙུགས། དེ་ཐུག་ལས་བཏང་སྟེ། ཉི་མ་ལ་ཟན་གྲོ་ཀོ་རོ་བརྒྱ་བཏང་ཅས་བཙོས་སྟེ་བོརས། དེ་ནས་ཞག་ཅིག་ལ། མོན་པ་ལ་རིའི་ཤིང་ཚར་དེ་གསེར་ལུག་གི་མགོ་ཟམ་ཅིག་ཐོབ་བོ། མོན་སྤྱིང་ལ་གྲོག་པོ་འི་ཆུ་ཚར་དེ་གཡུའི་ཚིག་བུ་ཞིག་ཐོབ་སོང་། མོན་པས་ཟེརས་པ། འདི་གསེར་དང་གཡུའི་ཚིག་བུ་དེ་བཙོང་ན། ང་དང་ལ་ནོར་རྒྱལ་ལ་ཞིག་ཐོབ་ཡིན་ཟེརས་པ། མོན་སྤྱིང་གིས་ཟེརས། ནོར་ཐོབ་སྟེ་ང་དང་ལ་ཅི་བཅེ་ཡིན། མི་ནི་སློབ་དཔོན་རྩེ་དགུ་ལ་ཕུལ་དེ། ང་དང་ལ་ལས་བཏང་སྟེ་སྐྱམ། ཟ་བཏང་སྟེ་སྐྱིད་ཏུ་ཡིན་ཟེརས་པ། ཁོང་གཉིས་ཀ་ཁ་འཆམས་སོ། དེ་ནས་ཁོང་གིས་གསེར་ལུག་མགོ་ཟམ་དང་གཡུའི་ཚིག་བུ་གཉིས་ཀ་ཁུར་དེ་མི་ལེ་ལ་ཕུ་ཕུལ་གྱི་གླུ་ཞིག་འདི་ལྟར།

ང་ཞའི་མི་མེས་དངོས་ལ་ཉན་ལོ།
སློབ་དཔོན་རྩེ་དགུ་བདག་ལ་གསན་ལོ།
རིའི་ཤིང་ཚར་དེ་གསེར་ལུག་མགོ་ཟམ་ཐོབ་ལོ།
གྲོག་པོ་འི་ཆུ་ཚར་དེ་གཡུའི་ཚིག་བུ་ཞིག་ཐོབ་ལོ།
དེ་ཀུན་འཁུར་དེ་མི་མི་ལ་ཕུ་བ་ཞིག་ཕུལ་ཡིན།
ང་ཞའི་ཕུ་བ་རིག་གསན་པར་མཛོད་ལོ།

ཉི་མའི་ལས་བདང་སྟེ་སྐྱས་པ་རིག་མཛད་ལོ།

ཉི་མའི་ཟ་བདང་སྟེ་སྐྱེད་པ་རིག་མཛད་ལོ།

དེ་ཟུག་ཞུས་པ། མི་མི་སློབ་དཔོན་གྱིས་བསམ། ཁོང་ལ་ཉི་མའི་ལས་སྐྱེད་ན། གསེར་དང་གཡུ་མང་པོ་འཁྱིང་ཡིན་བསམ་སྟེ། ཟ་བདང་སྟེ་སྐྱམས། ལས་བདང་སྟེ་སྐྱེད་དེ་བདངས་སོ། དེ་ནས་ཁོང་མོན་པ་མོན་སྲིང་གཉིས་ཀ་ལ་སློ་ཡོང་སྟེ། ནང་གི་ལུང་པའི་ཕྲུ་ལ་ཤོར་དེ་སོང་བ། དེ་རུ་དག་གི་མཚོ་ཞིག་ཡོད་ཚུག་པ། ཁོང་དེའི་མཚོ་འི་ནང་དུ་ཞུགས་པ། ཁོང་གཉིས་ཀ་ལ་ཁྲག་གི་རལ་པ་སྐྱེས། ཆ་སོ་གཅིག་གནམ་ལ་སོང་། ཆ་སོ་གཅིག་ས་ལ་ཟུག་སྟེ། མི་མི་སློབ་དཔོན་རྗེ་དགུ་ཟ་ཆེན་ཟེར་གྱིན་ཞིག་ཡོངས་སོ། མི་མི་ལ་ཁོང་ཡོང་ཅེས་ཤེས་དེ། ད་སྒོ་དགུ་རིམ་བཅུག་སྟེ། མི་མི་ཁོ་རང་ནང་ལ་ཡིབ་སྟེ་འདུགས་སོ། དེ་ནས་ཁོང་མི་མིའི་སྒོ་ལ་བསླེབ་སྟེ། སྒོ་བདུན་དེ་བཅག་སྟེ། སྒོ་གཉིས་ལུས་སོ། དེ་པོ་ཨ་ནེ་བཀར་དམན་ལ་ཀྲོ་ལ་མཐོང་སྟེ། ཀ་སར་ལ་ཟེར་བ་ལ་སོང་། ཀ་སར་ལྡེམ་ལྡེམ་མི་ལྡེམ་མཁར་ལ་མཚམས་ལ་ཡོད་ཚུག་པ། ཨ་ནེ་བཀར་དམན་ཀྲུལ་མོས་ཀ་སར་ལ་གླུ་ཞིག་བདངས་སོ།

ཁྲ་སྟངས་ཅན་ནི་སྟངས་མེད་ཀ་སར་དཀྲིས་ལ་ཉེར།

ཁྲ་གྲོས་ཅན་ནི་གྲོས་མེད་རྒྱལ་པོ་ཀ་སར་བདག་ལ་གསན།

ཁྱེད་ཀྱི་མོན་པ་དང་མོན་སྲིང་གིས་མི་མི་ཟ་རྡུག་ལོ།

མོན་པ་མོན་སྲིང་གིས་སློབ་དཔོན་རྗེ་དགུ་ཟ་རྡུག་ལོ།

སྲུང་ཁ་གསོ་སྟེ་སྒོ་ཁྲི་མི་འགྱུར་ལོ།

ཉལ་བུ་གསོ་སྟེ་པའི་བུ་མི་འགྱུར་ལོ།

ཁྱེད་མགྱོགས་པ་དེ་རྟ་ཆ་དགོས་སྨུག།

ཁྱེད་མགྱོགས་པ་སོང་སྟེ་ཁོང་བདུད་ཡུལ་ལ་དོང་ལོ།

དེ་རྫུག་ཟེརས་པ། ཟེར་ནའང་། ཀེ་སར་མ་ཆ་ལ་འདུགས་པ། ཡང་ཨ་ནེས་ཁ་སྐྱེས་པ་སང་། ཀེ་སར་རྒྱལ་པོ་ཀྲུང་གོར་དབྱེར་པ་ལ་སྣ་མ་གཏད་པ། དོ་གོམ་ཞིག་གཏད་དེ་ན། མགྱོགས་པ་སོང་ནས། མོན་པ་དང་མོན་སྤྲིང་གཉིས་ཀ་ལ་རྟ་པ་ཞིག་ཡོང་ཅེས་མཐོང་སྟེ་ཟེརས་པ། ལྷ་མོན་སྤྲིང་། ཨ་ནས་རྟ་པ་ཞིག་ཡོང་འདུག། སྔོན་ལ་ང་དང་དེ་བོ་ཟླ་ལ་ཆེན་ཟེར་དེ། ལོ་མི་བོར་དེ་ན་ཿ་རྟ་སོང་བ། རྟ་པ་དེ་ཀེ་སར་ཡིན་པས། ཀེ་སར་ལ་ཁོང་མཐོང་སྟེ་འཛིག་འཛིག་རིག་སོང་སྟེ་ཟེརས། ལྷ་མོན་པ་མོན་སྤྲིང་གཉིས་ཀ། ཁོ་རང་གཉིས་ཀ་ངས་གསོས་པ། ད་ལྟ་ང་ཟ་ཅེས་ལ་ཡོང་འདུག་ག། མི་མིས་ཀྱང་གསོས་པ་སང་། ད་ལྟ་ངསད་འདུག་ག། དེ་རྫུག་ཟེརས་པ། ཁོང་གཉིས་ཀས་ཀེ་སར་ལ་ཕྱུག་ཕྱུལ་དེ་ཞུས་པ། ང་ཅ་ལ་རིའི་ཤིང་ཚར་དེ། གསེར་ལྕུག་མགོ་ཟམ་ཐོབ། གྲོག་པོ་འི་རྒྱུ་ཚར་དེ་གཡུའི་ཚོག་བུ་ཞིག་ཐོབ་ལེ། དེ་གཉིས་ཀ་འཁྲུར་དེ། ལོ་མི་ལ་ཞུ་ཕྱུལ་ཞིག་བཏངས་པ། ང་ཞ་ལ་ཟ་བཏང་སྐྱིད། ལས་བཏང་སྐྱས་ཞུས་པ། མི་མིས་ཟ་བཏང་སྟེ་སྐྱམས། ལས་བཏང་སྟེ་སྐྱིད་དེ་བཏངས། དེ་ནས་ང་ཞ་ལ་སྤོ་ཡོང་སྟེ་དྲང་གི་ལྕང་པའི་ནང་དུ་སོང་བ། དེ་རྟ་མཚོ་ཞིག་འདུག། དེ་མཚོ་འི་ནང་དུ་ཞུགས་པ། ང་ཞ་འདི་རྫུག་སྐྱོར་བ་སོང་ཞུས་པ། དེ་ནས་ཀེ་སར་གྱིས་བདུད་ཡུལ་ལ་བཏང་ཅེས་ཡིན་པ། ཁ་ནོར་ལ་ཡོང་སྟེ། ཁྱེ་ཞ་ཀླུ་ཡུལ་ལ་སོང་ཤིག། ཀླུའི་གྲོང་ཁྱེར་བཅོ་བརྒྱད་རེ་ཉི་མའི་ཟ་བཏང་ཡིན་ཟེར་དེ་ན། རྟ་ལྕུག་རེ་བཏང་སྟེ་ན་ཀླུ་ཡུལ་ལ་བཏང་སོ། ཀེ་སར་ཁྱིར་

ལོག་སྡེ། ལྷེམ་ལྷེམ་མི་ལྷེམ་མཁར་ལ་ཨོངས། མོན་པ་མོན་སྦྱིང་གཉིས་ཀ་ཀླུ་ཡུལ་ལ་བསྐྱིབ་སྡེ། ཀླུའི་གྲོང་ཁྱེར་བཅོ་བརྒྱད་རི་ཉི་མའི་ཟ་བདང་ལ་ཟེན་ཞིག་འདུགས་པ། ཀླུའི་བརྒྱུད་བཅད་བདངས། དེ་ནས་ཀླུ་ཚང་མས་གྲབས་བཅོས་པ། ང་དང་གི་ཡུལ་ལ་ཞི་བདེ་ནང་དུ་མན་ནམ་གནས་པ། མི་བརྒྱུད་ཆད་ཅེས་ལ་ཐུག་སོང་། སུའི་སྐྱོན་ཡིན་ཟེར་དེ། མོ་པ། རྩིས་པ། བསྟུས་ནས་མོ་རྩིས་སྐོར་ས་པས། མོ་འི་ནང་ནས། གླིང་ཀ་སར་རྒྱལ་པོ་འི་སྐྱོན་འདུག། ཁོ་འདིར་བསྐྱིབ་སྡེ་མིན་བ་ཅིའང་བཅོ་ཐབས་མི་འདུག་ཟེརས། དེ་ནས་རྒྱལ་པོ་ཀ་སར་ལ་བཟོས་པ་སྲུ་ཆེན་ཟེརས་པ། ཁོང་གི་གྲབས་ནང་དུ་ཀླུ་མོ་དར་གྱི་ཨང་མཛེས་མ་དང་། དར་གྱི་མགྲོང་མཛེས་མ་གཉིས་ཀ་བདང་ན། ཀེ་སར་སྐྱོར་ཡིན་ཟེར་དེ། ཁོང་གཉིས་ཀ་ལ་ཟེརས་པ། ཁྱེད་གཉིས་ཀ་ལ་མཁར་ཕྱེད་ཡུལ་ཕྱེད་ཧྲན་པ་ལ་བདང་ཡིན་ཟེར་དེ་ཁོང་གཉིས་ཀ་གླིང་ཡུལ་ལ་སོང་། དེ་ནས་ཁོང་གཉིས་ཀ་གླིང་ཡུལ་ལ་རྒྱལ་ལྕམ་ཀེ་སར་གྱི་སྲུང་རི་སང་སང་ལྷ་འབྲོག་ལ་བསྐྱིབ་སྡེ། གར་དཀར་བརྒྱ། གར་ནག་བརྒྱ་ཟམ་པབ་སྡེ་འདུགས་པས། དེ་ཟུག་ཡོད་ཅེས་དེ་ཀེ་སར་ལ་ཆོར་དེ། ཨ་གུ་ཁྲའི་མགོ་ཁྲའི་ཐང་ལྟོ་ལ་བདངས་པ། ཨ་གུ་ཁྲའི་ཐང་དེ་རུ་བསྐྱིབ་སྡེ་གླུ་ཞིག་བདངས་སོ།

ཁྱེད་གར་དཀར་པབ་མཁན་དེ་སུ་ཞིག་ཡིན།
ཁྱེད་གར་ནག་པབ་མཁན་དེ་སུ་ཞིག་ཡིན་ལོ།
ང་ཞའ་རྒྱལ་པོ་འི་སྲུང་རི་ཞིག་ཡིན་ལོ།
ཙྭ་རིང་རིང་ཟམ་དེ་ཁྱིག་ཐོང་གི་མདུང་ཟམ་ཡོད་ལོ།
ཙྭ་བར་པ་དེ་ཁྱིག་ཐོང་གི་མདའ་ཟམ་ཡོད་ལོ།

དེ་སང་ཆུང་བ་དེ་ན་ཆུང་ཕང་ཟམ་ཞིག་ཡོད་ལོ།

དེ་སང་ཆུང་ཆུང་དེ་ས་གཞི་ཚང་མ་གང་སྟེ་ཡོད།

རྩྭ་རིང་རིང་ཟམ་ལ་རྩྭ་རིན་དེ་རྟ་དང་ཁྲ་རྩུ་རག་སྟེ་ཡིན།

རྩྭ་བར་པ་རྣམས་ལ་རྩྭ་རིན་བ་དང་བེ་བྲོ་རག་སྟེ་ཡིན།

དེ་སང་ཆུང་བ་ལ་རྩྭ་རིན་ལུག་དང་ལུ་གུ་རག་སྟེ་ཡིན།

དེ་སང་ཆུང་བ་ལ་རྩྭ་གོར་རེ་ལ་ཞོ་གྲངས་རེ་ཡིན་ལོ།

རྩྭ་ཟ་ཅེས་བ་སང་སྐྱོག་ཅེས་བྲ་བ་ཡིན་ལོ།

ཆུ་འཐུང་ཅེས་བ་སང་ཁ་ཤུལ་བདང་ཅེས་བྲུ་ལོ།

དེ་ཟུག་ཟེརས་པ། གླུ་མོ་གཉིས་ཀྱིས་གཏམ་ལན་ཅིའང་མ་ཟེར་བ། དྲིན་མོ་ལྷག་དཀར་རེ་ལ་རྫུ་སྟེ། ཁྲིའི་ཐུང་ལ་འདེད་དེ་ཁྱོངས་སོ། ཁྲིའི་ཐུང་འཛིག་སྟེ། རལ་གྱི་ཕྱིར་ལོག་ལ་རྒྱབ་གྱིན་ཞིག་ཡོར་དེ་གླིང་མཁར་དུ་བསྐྱིབས་སོ། དེ་རུ་སྐྱིབ་སྐྱིབ་ལ། རལ་གྲི་རང་གི་རྟ་ལ་ཞོག་སྟེ་མ་ཁ་འཐོན་དེ་ཡོད་ཚུག། དེ་ནས་ཀ་སར་ལ་ཞུས་པ། ད་དམག་ཡོད་ན་སྐྱུང་ཤིག། དེ་རུ་དམག་མང་བ་བསྐྱིབ་སྟེ་འདུག། ང་མི་དཔའ་བོ་ཡིན་པ་སང། ང་རང་གི་སྔོག་བསྐྱིབ་སོང་ཟེརས་པ། ཨ་གུ་དཔལ་ལེས་བལྟས་པ། རྟའི་རྒྱབ་ལ་རྨ་ཁ་འཐོན་དེ་ཡོད་པ་སང་། དཔལ་ལེས་ཟེརས། འོ་གཞན་མཆོད་མེད་ནོག། རང་མཆོད་ཡིན་ནོག་ཟེར་དེ་ན། ཨ་གུ་དཔལ་ལེ་དེ་རུ་ལྟ་ལ་སོང་བས། དེ་རུ་བསྐྱིབ་སྟེ་ཡང་གླུ་ཞིག་བཏངས་སོ།

ལྷ་གར་དཀར་ནང་ཡོད་མཁར་དངོས་ལ་ཉོན།

ལྷ་གར་ནག་ནང་ཡོད་མཁར་བདག་ལ་གསན་ལོ།

ཁྱོད་ང་ཞའི་རྒྱལ་པོ་འི་སྐྱུང་རི་ལ་ཅི་ལ་ཡོངས།

ཙ་རིང་རིང་ཟམ་དེ་མདུང་ཟམ་ཡོད།
ཙ་བར་པ་རྣམས་དེ་མདའ་ཟམ་ཡོད།
ཙ་ཆུང་ཆུང་ཟམ་དེ་ཕང་ཟམ་ཡོད།
ཙ་རིང་རིང་ཟམ་ལ་རིན་དེ་རྟ་དང་བྲ་རྩ་ཡིན།
ཙ་བར་པ་དེ་ལ་རིན་བ་དང་བེ་ཐོ་རིག་ཡིན།
ཙ་ཆུང་བ་དེ་ལ་རིན་ལུག་དང་ལུ་གུ་ཡིན་ལོ།
ཙ་ཟ་ཅེས་པ་སང་སློག་ཅེས་བྲ་ལོ།
ཆུ་འཐུང་ཅེས་པ་སང་ཁ་བདབ་ཅེས་དེ་བྲ་ལོ།

དེ་ནུབ་ཟེར་ས་པ། གླུ་མོ་གཉིས་ཀྱིས་གདམ་ལན་ཅིའང་མ་ཟེར་བ་དྲིན་མོ་ལྷག་དཀར་རེ་ལ་ཧཱུ་སྟེ། ཁྲིའི་ཐང་ལ་འདེད་དེ་ཁྲོངས་སོ་ཁྲིའི་ཐུང་འཛིགང་སྟེ། རལ་གྱི་ཡིར་ལོག་ལ་རྒྱབ་ཀྱིན་ཞིག་ཤོར་དེ་གླིང་མཁར་དུ་བསྐྱེབསེ་སོ། དེ་རྩ་སྐྱེབ་སྐྱེབ་ལ། ར་ལ་གྲི་རང་གི་རྟ་ལ་རོག་སྟེ་རྨ་ཁ་ཐོན་དེ་ཡོད་ཚུག། རེ་ནས་ཀེ་སར་ལ་ཞུས་པ། ར་དམག་ཡོད་ན་སྤྱུང་ཤིག། དེ་རྩ་དམག་མང་བ་བསྐྱེབ་སྟེ་འདུག། ང་མི་དཔའ་བོ་ཡིན་བ་སང་། ང་རང་གི་སྲོག་བསྐྱེབ་སོང་ཟེར་ས་པ། ཨ་གུ་དཔལ་ལེས་བསྟུས་པ། རྟའི་རྒྱབ་ལ་རྨ་ཁ་འཐོན་དེ་ཡོད་པ་སང་། དཔལ་ལེས་ཟེར་ས། འོ་གཞན་མཆོན་རེན་ནོག། རང་མཚོན་ཡིན་ནོག། ཟེར་དེ་ན། ཨ་གུ་དཔལ་ལེ་ལྷ་ལ་སོང་བས། དེ་རྩ་བསྐྱེབ་སྟེ་ཡང་སྟོན་མ་ལྷར་གླུ་ཞིག་བདངས་སོ།།

ཡང་དྲིན་མོ་གཉིས་ལ་ཧཱུ་སྟེ་འདེད་དེ་ཁྲོངས་པ། དཔལ་ལེ་ཕོང་ཡོག་ཅིག་ལ་ཡིབ་སྟེ་ན། རལ་གྲི་ལ་ཁར་ཁར་བདང་གིན་ཞིག་འདུག་པ།

ཁོང་ལོག་སྟེ་སོང་། ལོག་སྟེ་ཚ་ཟ་ན། དཔལ་ལེ་ལ་ཁོང་བུ་མོ་རེ་ཡིན་བ་ཤེས་ཏེ་གླིང་མཁར་དུ་སོང་སྟེ། རྒྱལ་པོ་ཀེ་སར་ལ་ཞུས་པ། དེ་ཙུ་ཡོད་མཁན་གྱི་མི་ཀུན་བུ་མོ་རེ་ཡིན་ཅེས་འདུག། ཛོ་ཛོ་འབྲུ་གུ་མ་ལྟོལ་བདང་ན་རྒྱལ་ཡིན་ཟེར་དེ། ཛོ་ཛོ་དེ་ཙུ་བདངས་པ། ཁོང་ལ་ཛོ་ཛོ་འབྲུ་གུ་མ་ཡོང་ཅེས་མཐོང་སྟེ། ཐོག་དཀལ་ཅེར་འཁུར་དེ་ལམ་ལ་སྲུ་སྟེ་ཡོངས། དེ་ནས་ཛོ་ཛོ་ཁྲིད་ནས་གུར་ནང་དུ་ཁྱེར་དེ་མགྲོན་བདང་གིན་ཞིག་ཞིག་བདུན་ཟམ་ལུས་སོ། དེ་ནས་ཁོང་གིས་ཟེརས་པ། ཛོ་ཛོ་ལེ། རྒྱལ་པོ་ཀེ་སར་འདིར་སྲིབ་ཅིག་བདང་ན་ཐུགས་རྗེ་ཆེ་ཟེརས་པ། ཛོ་ཛོ་ས་བདང་ཚད་བཅོ་སྟེ། ཕྱིར་ལོག་སྟེ་མཁར་དུ་ཡོང་སྟེ་རྒྱལ་པོ་ཀེ་སར་ལ་ཞུས་པ། རྒྱལ་པོ་ལེ། དེ་གར་དཀར་གར་ནག་སྦྲུབ་མཁན་དེ་ནི་ཀླུ་མོ་རེ་ཡིན་ནོག། ཀླུ་མོ་དང་ལ་ཡང་མཛེས་མ་དང་མཐོང་མཛེས་མ་ཡིན་ནོག། ཉི་རང་དེར་སྲིབ་ཅིག་སྐྱོད་དགོསའདུག་ལེ་ཟེརས་པ། ཀེ་སར་གྱིས་འདྲིས་པ། ཛོ་ཛོ་རང་གིས་ང་བདང་ཅེས་བཅོས་པ་ཡིན་ན་ཟེརས་པ། ཛོ་ཛོས་ཟེརས། ངས་སྲིབ་ཅིག་བདང་ཚད་བཅོས་པ་ཡིན་ཟེརས། ཀེ་སར་གྱིས་ཟེརས་ཛོ་ཛོ་རང་ལ་འགྲོད་པ་ཞིག་ཡོང་ཡིན། ཡིན་ཀྱང་ངའི་རྟ་འཁྱོང་བ་ལ་རྡང་གི་ལུང་པའི་ནང་དུ་ཛོ་ཛོ་རང་སྐྱོད་ཟེརས་པ། ཛོ་ཛོ་རྡང་གི་ལུང་པའི་ནང་དུ་སོང་སྟེ། རི་མཐོན་པོ་ཞིག་གི་ཁ་ལ་བིང་སྟེ། ཐ་ཙུ་ལ་གླུ་ཞིག་བདངས་སོ།

ཨ་མའི་ཐ་ཙུས་དངོས་ལ་ཉོན་ལོ།
ཀྱང་རྒོད་དབྱེར་པས་བདག་ལ་གསན།
བུ་མོ་ང་རང་བ་སང་སྨུག་པོ་མེད་ལོ།
རྒྱལ་པོ་ཀེ་སར་བ་སང་སྐྱིད་པོ་མི་འདུག།

རྒྱལ་པོ་ཀ་སར་གྱིས་ཞིམ་ཟག་མངར་ཚ་བཀལ་དེ་ཡོད།
བུ་མོ་ང་རང་གིས་བྲ་ཟན་སློག་ཚུ་ཞིག་འཁུར་དེ་ཡོད།
གྲ་རུ་འབབ་སྟེ་སྐྱིད་རོགས་རིག་མཛོད་ལོ།

དེ་ཟུག་ཟེརས་པ། གྲ་རུས། ཁྱོད་ཁ་དམར་མོ་སྨུག་པོ་ཡོད་ནའང་འགྲིག། རྒྱལ་པོ་ཀ་སར་སྐྱིད་པ་རག་ཟེརས་པ། ཛོ་ཛོ་འབྲུ་གུ་མ་ལ་ཤི་ལང་ཞིག་རྒྱབ་སྟེ་ན། གྲ་རུ་གང་རི་ནང་དུ་ཤོར་སོང་བས། དེ་ནས་ཛོ་ཛོ་ལ་སྒྲོ་ཡོང་སྟེ་ཕྱིར་ལོག་སྟེ་རང་གི་ཡབ་བརྟན་པ་དང་། ཡུམ་སྟོན་མོའི་མདུན་ལ་ཡོང་སྟེ་འདུགས་པ། ཡབ་བརྟན་པ་དང་ཡུམ་སྟོན་མོ་གཉིས་ཀས། ཁ་སྐྱེ་སྟེ་ཟེརས། ཀ་སར་དཔག་ལ་ཆ་ཅེས་ཡིན་ན། ཡང་ནཡིངས་ལ་ཆ་ཅེས་ཡིན་ན། ལས་ཁག་ཅན་ཡོད་འགྲོ། ཁྱོ་རང་ཡང་རི་ལ་ལོག་སྟེ་སོང་ཟེར་དེ། དབྱུག་རྡོ་ཞིག་བདངས། རྡོ་ཆེ་ཆུང་གསུམ་བཀལ་དེ་བདངས་པ། ཛོ་ཛོ་ཡང་རི་ལ་ལོག་སྟེ་སོང་། དེ་ནས་གྲ་རུ་ལ་གདམས་ལན་གླུ་ཞིག་བདངས་སོ།

ཀླ་གྲ་རུ་ཁྱུང་རྒོད་དངོས་ལ་ཉེན།
ཀླ་ཁྱུང་རྒོད་རྒྱེར་པ་བདག་ལ་གསན།
ཁྱེད་ཡོང་ཡིན་ལོ་ཟེར་ན་འབབ་སྟེ་ཡོང་།
ཁྱེད་མི་ཡོང་རིག་ཟེར་ན་རེ།
མེ་མེའི་དུས་ལ་ཁལ་པ་ཡིན།
ཨ་བའི་དུས་ལ་ལྷུས་པ་ཡིན།
བུ་མོ་ང་རང་གི་དུས་ལ་འཁུར་པ་ཡིན།
ར་དབྱུག་ཁྲི་ལྷུག་བོང་ཐིལ་གསུམ་ཡོད་ལོ།

རྟོ་བ་ཆེ་ཆུང་གསུམ་ཟམ་ཡོད་ལོ།
རྟོ་བ་ཆེ་ཆེ་དེ་ཧྲ་གྲོད་ཟམ་ཡོད་ལོ།
རྟོ་བ་བར་པ་དེ་ག་ཡག་གྲོད་ཟམ་ཡོད་ལོ།
རྟོ་བ་ཆུང་ཆུང་དེ་ལུག་གྲོད་ཟམ་ཡོད་ལོ།
བཏང་དང་མི་གཏང་ཐེ་ཚོམ་རིག་ཡོད་ལོ།
བཏངས་པ་ནས་ཕར་ལ་མི་ཐོག་ཙམ་མེད་ལོ།
ཐོག་པ་ནས་ཕར་ལ་མི་ཤི་ཙམ་མེད་ལོ།
ཤི་པ་ནས་ཕར་ལ་ཀྱལ་བ་ལ་ཆེན་འགྲོ།

དེ་ཟུག་ཟེར་གྱིན་ཞིག་གཡས་རི་ལ་ལྷ་སྟེ་དབྱུག་རྟོ་ཞིག་བཏངས་པ། དེ་གཡས་རི་ལ་ཐོག་སྟེ་ཆར་མ་ཞིག་ཐྲ་རྒྱུའི་རྣ་མཆོག་ལ་ཐོག་པ། ཐྲ་རྒྱུ་ཤུན་སོང་། དེ་ནས་ཐྲ་རྒྱུ་ལངས་དེ། འཛིག་སྟེ་ཟབ་སྟེ་ཡོངས། ཇོ་ཇོ་འི་མདུན་ལ་བསྙེབ་པ། ཇོ་ཇོས་ཟེརས་པ། སྐྱ་རང་གཏད་སོང་ཤིག། སྤྲབས་རང་ཞུགས་སོང་ཤིག། ཕུར་མགོ་རང་ཞུགས་སོང་ཤིག། བུ་མོ་ང་རང་རང་ཁྲེལ་སོང་ཤིག་ཟེར་དེ་ན་མཆོངས་པ། ཐྲ་རྒྱུའི་ཁ་རང་ཞེན་ལ་སོང་། ཐྲ་རྒྱུ་ལ་སྨྲོ་ཡོང་སྟེ། ནམ་མཁའ་ལ་ཁྱེར་དེ་ཁྲིརས་པ། ཇོ་ཇོ་གློ་ཡོག་ལ་བཞུགས། ས་ལ་ནན་ཡིན་ཟེར་དེ་ས་ལ་ཕབས་པ། གཡས་པ་རྐྱིབ་མ་ལ་བྱུར། གཡས་རི་ལ་ནན་བཏང་ཡིན་ཟེར་དེ་གཡས་རི་ལ་ཁྲིད་པ། གཡོན་གྱི་རྐྱིབ་མ་ལ་བྱུར་སོང་། དེ་ཟུག་མང་པོ་བཙོས་པ། ཐྲ་རྒྱུ་ལ་སྐལ་པ་ཐེབ་སྟེ། ཤུལ་པ་ཚང་མ་ལ་རྨ་ཁ་ཐོན་ནས། གླིང་མཁར་དུ་བསྙེབ་སོང་། དེ་རྒྱུ་དང་གི་བྲེས་ལ་བདག་སྟེ་ན། ཇོ་ཇོ་ཡབ་བརྟན་པ་དང་ཡུམ་སྒྲོན་མོ་འི་རྩར་སོང་སྟེ་སྒྲོ་བཙོ་སྟེ་འདུགས་སོ། གནམ་ལངས་

སིན་ཞིག་ཐ་རུས་སྐད་ཅིག་བཏངས་པ། ཀ་སར་ལ་རྫོར་དེ་ལྟ་ལ་ཡོངས་པ། ཐ་རུ་ལ་སྐལ་པ་མང་པོ་བཞིང་སྟེ་ཡོད་ཚུག། དེ་ནས་ཀ་སར་དང་ཐ་རུ་གཉིས་ཀ་ཅུ་སོང་། ཐ་རུས་ཟེརས་པ། རྒྱལ་པོ་ལེ། ངདང་ཅུ་སྟེ་པན་ཐོགས་ཅིའང་མེད། ངའི་རྣ་མཆོག་ནང་དུ་ཛ་ཀུ་དང་སྨན་ཡོད། དེ་བོ་ཕིང་སྟེ། ཛ་ཀུ་དང་ཀྲོས། སྨན་དེ་དོབ། ཨམ་བི་དེ་ཐྲུ་ལུ་ཞིག་ཟ་ལ་དོང་། བདུད་ཅི་ཚུ་མིག་ཅིག་འཐུང་བ་དོང་། དེ་ནས་པན་ཆེན་ཟེརས་པ། ཀ་སར་གྱིས་ཛ་ཀུ་དང་བཀྲུས། སྨན་དེ་བདབས། ཨམ་བི་དེ་ཐྲུ་ལུ་ཟ་ལ་བཏངས། བདུད་ཅི་ཚུ་མིག་ཅིག་འཐུང་བ་ལ་བཏངས། ཀྱང་རྒོད་དབྱེར་པ་དེ་སྔོན་མ་མཆོགས་སོང་བས། ཀ་སར་ཡབ་བརྟན་པ་དང་ཡུམ་སྒྲོན་མོ་འི་མདུན་ལ་སོང་སྟེ་ཛོ་ཛོ་ལ་གླུ་ཞིག་འདི་ལྟར།

ཀླུ་ཡབ་བརྟན་པའི་བུ་མོ་ཁ་དམར་མོ་ཉེན་དང་།
ཡུམ་སྒྲོན་མོ་འི་བུ་མོ་ལྟོ་དམར་མོ་ཉེན་དང་།
ཞིམ་པོ་ཟེས་པའི་ཆོལ་སགས་མོ།
ལགས་མོ་གོནས་པའི་སྐྱང་འགྲིང་མོ།
ཡོང་ཡིན་ན་ཡོང་བའི་གདམ་ལན་དོང་།
མ་ཡོང་ཡིན་ན་མི་ཡོང་བའི་གདམ་ལན་དོང་།
ཟན་དང་ནོར་གྱི་ཆད་པ་མེད་ལོ།
རིན་ཅན་སྒྲོག་ལ་ཆད་པ་ཡིན་ལོ།

དེ་ཟུག་ཟེར་དུ་ན། ཕྱིར་ལོག་སྟེ་གླིང་མཁར་དུ་ཡོང་སྟེ་འདུགས་པ། ཡབ་བརྟན་པ་དང་ཡུམ་སྒྲོན་མོ་གཉིས་ཀས་སོང་ཟེར་དེ་ཛོ་ཛོ་ལམ་བཙུགས་

སོ། དེ་ནས་ཇོ་ཇོ་གླིང་མཁར་དུ་བསྲེབ་སྟེ་འདུགས་པ། ཀེ་སར་གྱིས་ཇོ་ཇོ་ལ་གླུ་ཞིག་བཏངས་སོ།

ངའི་ཇོ་ཇོས་དངོས་ལ་ཉོན་དང་།
ཇོ་ཇོ་འབྲུ་གུ་མས་བདག་ལ་གསན་དང་།
སྒ་དང་སྒ་ཆུང་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་བཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་བདུག་ལོ།

སྲབས་དང་ཐུར་མགོ་སྒོ་དེ་རུ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

ཏོ་གོམ་དང་ཞུར་ལེ་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

མི་ཁུར་གཅིག་གི་སག་སྡག་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་ཅིག་རྡུག་ལོ།

གཞུའི་གཞུ་དོང་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

མག་མལ་གྱི་དབུ་ཞྭ་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

བན་འདུམ་ཙ་དར་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པའི་གསང་ཤུག་རིག་རྡུག་ལོ།

པད་ཀའི་སྐྱེ་རགས་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་ཆུ་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

གོས་ཤེན་དར་དབྱུག་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་རིག་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

ཀོ་ཤ་མ་སི་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།
རོང་ཡུལ་གྱི་ཏུ་དག་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།
བོ་གར་རི་སྨན་ཆས་སྒོ་ལ་ཕིང་ལོ།
སྒོ་ལ་ཕིང་སྟེ་ལན་གསུམ་སྤྲུག་ལོ།
མཚོ་མོ་འི་མཐིལ་ན་ཆུ་སྤྲུག་རིག་ཏོང་ལོ།
ཙན་དན་དམར་པོ་འི་གསང་ཤུག་རིག་རྡུག་ལོ།

དེ་ཟུག་ཟེར་ས་པ་སང་། ཇོ་ཇོས་ཚང་མ་སྒོ་ལ་ཕིང་སྟེ་ཚང་མ་སྤྲུགས་སོ། དེ་ནས་ཟ་ཅེས་ཟ་ལ་ནང་ལ་སོང་སྟེ་ཟོ་སྟེ། གོན་ཅེས་གོན་ཏེ་བིང་ཟ་ན། ཇོ་ཇོ་ལ་སྙིང་འབྲང་སྟེ་ངུ་འིན་ཞིག་གླུ་འདི་ལྟར།

རྒྱལ་ལྷམ་ཆེན་མོས་དབུ་ཞྭ་སྣམས་ཙ་ན།
ནམ་སྟོད་མཐོན་པོ་ལ་ཉི་མདངས་ཕོག་པ་དང་འདྲ་ལོ།
རྒྱལ་ལྷམ་ཀེ་སར་གྱིས་རྣམ་ཙར་སྣམས་ཙ་ན།
གང་སྟོད་མཐོན་པོ་ལ་ཉི་རྩེ་ཕོག་པ་དང་འདྲ།
རྒྱལ་ལྷམ་ཀེ་སར་གྱིས་ནམ་བཟའ་སྣམས་ཟ་ན།

མི་ཡུལ་པོ་འོད་ཀྱིས་ཁྱངས་སོང་།

རྒྱལ་ལྷམ་ཆེན་མོས་སྐྱེ་རགས་སྣམ་ཅན།

སྤྱང་སྤྱོད་མཐོན་པོ་ལ་ཟིལ་པ་འབབས་པ་དང་འདྲ།

རྒྱལ་ལྷམ་ཆེན་མོས་ཞབས་ལྷམ་ཀུན་སྣམས་ཅན།

ས་ལ་པད་མའི་མེ་ཏོག་ཤར་པ་དང་འདྲ།

དེ་ཟླུག་ཟེར་གྱིན་ཞིག་ཅུས་པ་སང་། ཀ་སར་གྱིས་གླུ་འདི་ལྷུར།

མ་ཤུམས་འང་ཇོ་ཇོ་མ་ཤུམས་ལི།

ཇོ་ཇོའི་ཤམ་མདོག་ལེགས་མོ་ལ་གནོད་ཅས་ཡིན།

མ་ཤུམས་འང་ཇོ་ཇོ་མ་ཤུམས་ལི།

ལོ་བརྒྱད་པ་དང་སོང་སྟེ། གཉིས་སྐོར་ལ་བསྐྱིབ་ཡིན།

གཉིས་སྐོར་དང་སོང་སྟེ། དྲུག་སྐོར་ནང་བསྐྱིབ་ཡིན།

ཁྱོག་ཐོང་ནང་སོང་སྟེ། སྐར་སྐྲུ་རི་དང་བསྐྱིབ་ཡིན།

སྐང་ར་ཁ་ཁོར་ནང་སོང་སྟེ། སྐྲ་དཀར་ཐར་ཐོར་ནང་བསྐྱིབ་ཡིན།

དེ་ཟླུག་ཟེརས་པ་སང་ཇོ་ཇོ་ཐབ་ཅུས་སོང་། དེ་ཚུགས་པ་ཀྱང་གྲོད་དབྱེར་པའི་མདུན་ལ་ལྦྲ་ཅོ་ཞིག་ཡོངས། རྒྱལ་པོ་ཀ་སར་གྱིས། ཇོ་ཇོ་ལ་ཟེརས། ཇོ་ཇོ་ལི། ང་འདི་ལྦྲ་ཅོ་ལ་ཇ་སྐྱེ་ཆེན་ཟེར་ནས། དུ་ལ་ཞོན་ཏེ་ལྦྲ་ཅོ་ལ་ཇ་སྐྱེ་སོང་བ། ཏིང་ན་ལྦྲ་ཅོ་དེ་སྟོར་སོང་བས། ཀ་སར་ཕྱིར་ལོག་སྐྱེ་མ་ཡོང་བར། ཀླུ་ཡུལ་ལ་སྐྱོད་སོང་། ཇོ་ཇོ་འབྲུ་གུ་མ་གླིང་མཁར་དུ་ལུས་སོ། ཀ་སར་ཀླུ་ཡུལ་ལ་བསྐྱིབ་སྐྱེ། ཀླུ་མོ་ཡང་མཛེས་མ་དང་མཐོང་མཛེས་མའི་པོ་འབྲང་ལ་ཞུགས་སོ། དེ་ནས་མོན་པ་དང་མོན་སྤྱིང་གཉིས་ཀ་ཁྱིང་སྐྱེ། ཀ་སར་གྱིས་མང་པོ་བཏུང་སྐྱེ། བདུད

ཡུལ་ལ་སོང་ཟེར་དེ་བཏངས། ཁོང་ལ་ཉི་མའི་ཟླ་བདང་ལ་དུག་སྦྲུལ་གྱི་
རིགས་ཚང་མ་ཟེ། ཟེརས་སོང་། དེ་ནས་ཀླུ་མོ་ཡང་མཛེས་མ་དང་མགྲོང་
མཛེས་མོ་འདི་མིང་བོ་ཧུག་ཧ་རིན་ཆེན་ཟེར་མཁན་དེ་དང་ཆོ་ལོ་རྩེ་འདིན་ཞིག།
ཀེ་སར་ཀླུ་ཡུལ་ལ་ལོ་དགུ་ཟམ་ལུས་སོང་། ཞག་ཅིག་ལ་ཧུག་ཧ་རིན
ཆེན་ལ་སྨྲོ་ཞིག་ཡོང་སྟེ། ཀེ་སར་ལ་ཁ་སྐྱེ་སྟེ། ཁྱོད་གླིང་རྗེད་མཁན
ཡིན་ནོག་ཟེརས་པ། ཀེ་སར་ལ་སྨྲོ་ཆེན་མོ་ཡོང་སྟེ་འདུགས་སོ། དེའི་
མཚན་པོ་ལ། ཀེ་སར་ལ་བྲ་ཧུ་རྒྱང་ཀྲོད་དབྱེར་པ་གཉིད་ལས་ལ་མགྲོང་སོང་།
ནམ་ལང་སྟེ་ན། ཀེ་སར་ལ་བྲ་ཧུའི་ཡིད་དུ་ཡོང་སྟེ་རི་ལ་བཙལ་བ་སོང་།
བྲ་ཧུ་མ་མགྲོང་བ་ལོ་དགུ་སོང་བས། བྲ་ཧུ་ག་ཧུ་ཡོད་ཅེས་མ་ཞེས་པས།
རི་ཚང་མ་ལ་ལྟེན་ཞིག་སོང་བ། ཞག་ཅིག་ཀླ་ཁ་ཅིག་སོང་མཁན་གྱི་ཞི་
ལང་ཞིག་དང་ཐུག་སོང་། ཡང་ཞག་ཁ་ཅིག་འགྲུལ་དེ་ན། ཞི་ལང་སོ་མ་
ཞིག་དང་ཐུག་སོང་། ཡང་ཞག་ཁ་ཅིག་ན་བྲ་ཧུ་དང་ཐུག་སོང་། བྲ་ཧུ་མ་
ཀྲུད་པ་ཞིག་སོང་སྟེ་ཡོད་ཚུག། དེ་ནས་བྲ་ཧུ་འཁྲིད་དེ་ཁྲོང་སྟེ། ཀླུ་མོ་
ཡང་མཛེས་དང་མགྲོང་མཛེས་ཀྱི་ཁང་པ་ཧུ་བསྐྱིབ་པས་བྲ་ཧུས། ཀེ་སར་
ལ་ཟེརས་པ། རྒྱལ་པོ་ལེ། འདི་རིང་ཁོང་གིས་ཟླ་ཙམ་ཅི་ཞིག་བཏང་ན་
མ་ཟླ་ཟེརས་པ། ཀེ་སར་གྱིས་ཀུང་མ་ཟེམ་སོ། གྲོ་རེ་སྤྲ་མོ་ཚུག་པོ་ལ་
ཁོང་ཧ་མི་གཉིས་ཀ་གླིང་ཡུལ་ལ་ཡོངས་པས། ཞག་གཉིས་ཀྱིས་གླིང་
ཡུལ་ལ་མ་བསླེབ་པ། ཀེ་སར་སྤྱང་ཁུ་ཞིག་ལ་ཛུ་སྟེ་ཡོངས་པ། ཨ་གུ
དཔལ་ལེ་ར་མ་ལ་ཡོང་སྟེ་ཡོད་ཚུག་པས། སྤྱང་ཁུས་ར་མ་ཞིག་བསད་
པས། ཨ་གུ་དཔལ་ལེ་ལ་སྤྱང་ཁུ་དེ་ཀེ་སར་ཡིན་པ་ཞེས་དེ་གླུ་ཞིག་
བཏངས་སོ།

ལྦ་སྲུང་ཁུ་ཁྲིད་ཀྱིས་དངོས་ལ་ཅོན་དང་།

ཁྲིད་སྲུང་ཁུ་ཁ་དམར་བདག་ལ་གསན་ལོ།

གླིང་མཁར་སྤོད་ལ་བཀའ་བློན་ཞིག་ཡོད་ལོ།

ཛེ་ཛེ་འབྲུ་གུ་མ་དེ་བཀའ་བློན་གྱིས་ཁྲིར་དེ་ཡོད་ལོ།

ཁྲིད་ལོ་སྐོར་བཅུ་གཉིས་བདུད་ཡུལ་ལ་འདུག་སོང་།

མདའ་དཔོན་གོང་མ་ཀུན་ཇོར་ལ་བསད་བཅུགས།

ད་ལྟ་ཀླུ་ཡུལ་ལ་འདུག་སྟེ་ལོ་དགུ་ཟམ་སོང་ལོ།

ཛེ་ཛེ་འབྲུ་གུ་མ་བཀའ་བློན་གྱིས་ཁྲིར་དེ་ཡོད་ལོ།

ང་ཞ་དཔའ་བོ་ཚང་མ་མཁར་ལ་ཡོང་བཅུག་པ་མེད་ལོ།

ར་རྩང་ཁྲིད་ཀྱིས་ང་ལ་མངས་པ་བཅོ་རྩུག་ག།

དེ་རྫུག་ཟེརས་པ་ས་སང་། ཀ་སར་ཨ་གུའི་མདུན་ལ་ཡོང་སྟེ། དངོས་བསྟན་དེ་གནས་ཚུལ་ཚང་མ་འདྲི་སྟེན། གྲུབ་པ་ཞིག་བཅོ་སྟེ་ན། གླིང་ཡུལ་ལ་སོང་སྟེ། མཁར་གྱི་སློལ་སོང་སྟེ། རགུར་མ་གླུ་ཞིག་འདི་ལྟར་བཏངས་སོ།

འདི་མཁར་གྱི་དཔོན་པོ་སུ་ཞིག་རང་བཞུགས་ཡོད།

གླིང་མཁར་གྱི་རྒྱལ་པོ་སུ་ཞིག་རང་ཡིན་ལོ།

འདི་མཁར་གྱི་རྒྱལ་པོ་སུ་ཞིག་རང་ཡིན་ལོ།

གྲུབ་པ་ང་རང་ལ་གསང་རབས་ཞིག་སྟུལ་ལོ

ཡང་མཁན་ང་རང་ལ་གསང་རབས་ཞིག་སྟུལ་ལོ།

དེ་རྫུག་ཟེརས་པ་སང་། ཛེ་ཛེ་འབྲུ་གུ་སས་དཀར་ཁུང་གཅིག་གི་ནང་ནས་བལྟ་སྟེ་གླུ་ཞིག་བཏང་ས།

མེ་མེ་གླུབ་པ་གང་ནས་སྐྱོད་ལོ།

མེ་མེ་ཁམ་བ་ག་ནས་སྐྱོད་ལོ།

ཤར་ནས་སྐྱོད་ད་ནུབ་ནས་སྐྱོད་ལོ།

ལྷོ་ནས་སྐྱོད་ད་བྱང་ནས་སྐྱོད་ལོ།

ཤར་གྱི་སྐད་ཆ་ཅི་ཞིག་འདུག་ལོ།

ལྷོའི་སྐད་ཆ་ཅི་ཞིག་འདུག་ལོ།

ནུབ་ཀྱི་སྐད་ཆ་ཅི་ཞིག་འདུག་ལོ།

བྱང་གི་སྐད་ཆ་ཅི་ཞིག་འདུག་ལོ།

དེ་ཟུག་འདྲི་བ་ཞིག་འདྲིས་པ་སང་། སེ་མེས་ལན་དུ་གླུ་ཞིག་བཏངས།

ང་ནི་ཡོང་ཡོང་བྱང་ཤར་མཚམས་ནས་ཡོངས།

ང་ལ་ཁ་བར་ཅིའང་མ་ཚོར་ལོ།

གླིང་ཀེ་སར་རྒྱལ་པོ་དེ་ཀླུ་ཡུལ་ལ་སྤོར་ལོ།

རྒྱལ་ལྷམ་ཀེ་སར་ཀླུ་ཡུལ་ལ་ཤི་ལོ།

དེ་ཟུག་ཟེརས་པ་སང་། ཇོ་ཇོ་ཐད་ཀྱིན་ཞིག་ཡེ་དང་མར་མང་པོ་ཁྲོངས་སོ། དེ་ཚུག་པ་མཚན་སོང་སྟེ། མེ་མེས་ཇོ་ཇོ་ལ་ཞུས་པ། ཇོ་ཇོ་ལེ། ང་ལ་འདི་རིང་བྲངས་ཞིག་སྟུལ། སྤུ་མོ་ང་ཡང་གྲོང་པ་ཞིག་ལ་ཚ་ཡིན་ཟེརས་པ། ཇོ་ཇོས་མཁར་གྱི་ནང་ཞིག་ལ་བྲང་ས་ལ་བོར་སོང་། དེ་ནས་མཚན་ཕྱེད་ཟམ་ལ་ཀེ་སར་མཁར་གྱི་ཁ་ཐོག་ལ་ལྟ་ལ་སོང་བ། བཀའ་བློན་ལྡན་པ་དང་ཇོ་ཇོ་མཉམ་པོ་ཡོད་ཚུག། དེ་ནས་ཀེ་སར་གྱིས་བཀའ་བློན་ཟུམ་སྟེ་ལྕུགས་ཀྱི་དྲ་མིག་ཅིག་གི་ནང་དུ་བཏང་སྟེ། མཁར་གྱི་མགོ་ནས་ཐུར་ལ་ཆར་ལ་བཏང་སྟེ་བོརས། སྤུ་མོ་ལ་བཀའ་བློན་གྱིས་ཀེ་

སར་ལ་ཞུས་པ། རྒྱལ་པོ་མཁྱེན་ནོ། ང་མ་བསད་ལེ། ངའི་ཡུལ་ཚང་མ་
ཉི་རང་ལ་ཕུལ་ཡིན། ང་རང་ཡང་ཉི་རང་གི་གཡོག་པོ་བཙོ་ཡིན། ངའི་
ནོར་ཟན་ཅི་ཡོད་མཁན་ཚང་མ་ཕུལ་ཡིན་ཟེརས་པ། དེ་ནས་ཀ་སར་གྱིས།
ཨ་གུ་དཔལ་ལེ། ཁོ་འི་ཡུལ་ལ་ལྟ་ལ་བཏང་ངས། བཀའ་བློན་ཡང་ཕུད་
སོང་། དེ་ནས་དཔལ་ལེ་དང་བཀའ་བློན་སོང་སྟེ། ཡུལ་ནང་ན་ཅི་ཡོད་
མཁན་ཚང་མ་ཐོ་འབྲི་སྟེ། ཨ་གུ་དཔལ་ལེས་ཁྲིངས། གླིང་ཡུལ་ལ་ཅི་
ལས་ཁག་ཅན་ཡོད་ན། བཀའ་བློན་རེས་མི་ཚང་མས་ཁྲིད་དེ་ཡོང་ཚད་
བཙོ་སྟེ། ཚད་དོན་ཁུར་དེ་དཔལ་ལེ་གླིང་མཁར་དུ་ཡོང་སྟེ། རྒྱལ་པོ་ཀ་
སར་ལ་ཕུལ་སོང་། དེ་ནས་རྒྱལ་པོ་ཀ་སར་དང་ཛོ་ཛོ་འབྲུ་གུ་མ་སེམས་
འབྲི་སྟེ་སྟོན་མ་ལྟར་སྐྱིད་པོ་འི་ནང་དུ་གནས་སོ།

61. *Miniature Tank Worship in Bengal.* Compiled by A. N. Moberly, I.C.S., *Superintendent of Ethnography, Bengal.*

In Bengal proper, miniature tanks, dug usually in the court-yard of their houses, enter largely into the religious ceremonies performed by women and girls. This practice is also found in Orissa, but to a less extent, and is still more rare in Behar, although there too ordinary tanks are closely connected with certain forms of worship. The origin of the custom is obscure. Ceremonies in which miniature tanks are used, are usually among those classed as *brata*, or the performance by women of a vow on a certain fixed date, with the object of obtaining some particular benefit, as contrasted with *pūjā*, or worship of the gods by men or women or both, as a regular religious observance. The tank is probably used symbolically. To dig a tank is a virtuous and meritorious action, which may be performed either to please the gods and thus to obtain happiness in this world and the next, or as an expiation of some known or unknown sin. Misfortunes such as barrenness or the death of husband or children are attributed to some religious demerit, and the miniature tank may therefore represent a penance for sins which have caused or may cause them. In the case of children, by whom the majority of the ceremonies, into which the miniature tank enters, are observed, another object may well be to familiarise them with the idea of worship by presenting it in an attractive form, whilst morals are pointed and explanations given by their elders, and a Brāhmaṇ is sometimes called in to perform the final acts. In some instances again, as in the case of the *Chaṭ Barat*, a miniature tank is substituted by high-caste women for the river or tank, at which the ceremony is usually performed, to obviate the necessity of appearance in public. It seems to be generally agreed that these observances are not of Purāṇik origin, though the Yama Pukur ceremony is referred to in the *Bhaviṣya Purāṇa*, and in the same work it is related that the unmarried girls of Nanda-Braja worshipped Kātyāyanī Devi in the month of Agrahāyaṇ, praying that Śrī Kṛṣṇa, the incarnate Viṣṇu, might become their husband,—a prayer somewhat analogous to those used at more than one of the *bratas*. The chief arguments against such an origin of miniature tank worship in its present form are that as a rule the worshipper herself officiates as priest, Brāhmaṇs not being generally employed, and that the verses recited are in the current vernacular, and not in Sanskrit, the language of all Purāṇik *mantras*.

The number of these *bratas* is considerable and the forms vary widely in different localities. It is by no means always clear what god or godling is being worshipped, nor is it possible in all cases to decide whether the ceremonies reported from different districts are merely local forms of one observance or are entirely distinct. They have therefore been arranged chronologically according to the months in which they take place. In some instances the tank employed is not necessarily a miniature tank, and in a few the tank is not indispensable to the ceremony at all.

Puṇya Pukur.

The chief tank ceremony of Baiśākh, and perhaps the most widely observed of all, is the Puṇya Pukur or, as it is sometimes called in Rajshahi, where the tank is not invariably used, the Dharmma Pukur. The tank is dug near the household *tulsī* plant (*Ocimum Sanctum*) or, sometimes, on the bank of the Ganges. A small branch of the *bel* tree (*Ægle Marmelos*) bearing seven thorns is fixed in a small ball of clay in the centre and adorned with wreaths of *ākand* flowers (*Callotropis Gigantea*), which are renewed from time to time during the month. Two cowries or, in some districts, a branch of the *bel* tree are placed at each corner. Seven steps are made at the sides and eight cowries smeared with vermilion are placed upside down on each step. In Burdwan *dūrbbā* grass (*Panicum Dactylon*) and *bel* leaves smeared with *candan* (Sandal) and vermilion are substituted for the cowries. Figures of gods and heroes are usually painted on the ground near the tank with sandal paste and adorned with vermilion. In Rajshahi, however, two images known as Bhādā and Bhādī and decorated with flowers and vermilion are substituted. In Burdwan clay figures are made to represent Śiva and Durgā, and a betel-nut and a cowry are placed before them; whilst in Bankura no figures are used at all. In Jalpaiguri twenty smaller tanks adorned with flowers and vermilion are dug round the central tank.

The tank is worshipped every morning in Baiśākh by girls of from eight to thirteen years. The worshippers are usually unmarried, but this is not a *sine quâ non*. They first bathe and then worship with flowers, *tulsī*, *dūrbbā* grass and paddy. A short verse is recited and a flower is thrown into the tank, which is daily filled with fresh water. This is repeated three times. The worshipper must not eat anything until the worship for the day has been performed. Should she be unable to fast on any day, a substitute who has duly fasted must take her place.

This ceremony must be performed for four successive years. On the last day of the last year the clay figures of Śiva and Durgā are replaced by golden images (a golden frog or fish is used in the cases in which the figures of Śiva and Durgā are not employed), and a *bel* twig of silver is placed in the middle of the tank. A fan, a towel, an earthen waterpot and a dish of rice are placed at each of the four corners. The family priest performs all the ceremonies which are observed in the consecration of a real tank. At the end of the *brata* the above-mentioned accessories together with as many cowries as would be required to fill the tank and pave its *ghāṭs* are given to Brāhmaṇs.

The object of the Puṇya Pukur Brata are explained by the following verses which are a specimen of those used at the ceremony. In some cases girls use their own rhymes instead of adhering rigidly to the prescribed forms.

PUṆYA PUKUR.

Puṇya pukur puṣpa mālā
Ke pūjere dupur belā?
Āmi satī guṇavatī
Bhāyer bon bhāgyavatī,
Habe putra marbe nā,
Pṛthibīte dharbe nā;
Svāmir kole putra dole,
Maraṇ hay yena Gangā jale.
Gangā jale śaṅkher dhvani,
Mare yena hai rāj rāṇī.
Ebār mare manuṣya haba,
Brāhmaṇ kule janma pāba,
Sītār mata satī haba,
Rāmer mata svāmi pāba,
Lakṣmaṇer mata debar pāba,
Daśarather mata śvaśur pāba.
Kauśalyār mata śāśuṛī pabā,
Girirājer mata bāp pāba,
Menakār mata mā pāba,
Durgār mata sohāgī haba,
Kārttik Gaṇeś bhāi pāba,
Kuberer dhan pāba,
Ābirer bar pāba.

TRANSLATION.

"Who is worshipping the tank with garlands of flowers at noon? It is I, chaste and virtuous, fortunate sister of a brother. May I have sons who will not die and (so many) that earth shall not contain them. May I die in the Ganges whilst my son rocks in my husband's bosom. The conch sounds on the Ganges; may I become a queen when I die. May I become a human being (again) after death and be born in the family of a Brāhmaṇ. May I be chaste like Sītā, may I have a husband like Rām, a brother-in-law like Lakṣmaṇ, a father-in-law like Daśarath, a mother-in-law like Kauśalyā, a father like Girirāj,[1] a mother like Menakā. May I be beloved like Durgā; may I have Kārttik and Ganeś as brothers; may I obtain the wealth of Kuber and the boon of Ābir."

Tuṣ Tuṣālu.

The Tuṣ Tuṣālu is observed in Baiśākh in the 24-Parganas. Elsewhere this ceremony is performed in Pauṣ. One hundred and twenty balls are made of the husks of new paddy (*tuṣ*) mixed with cowdung, *dūrbbā* grass and mustard (*Sariṣā*) and radish (*mūlā*) flowers. Four of the balls are worshipped each morning with similar flowers. On the last day of the month six *buṛi* and six (126)

1 Literally "king of mountains," *i.e.*, Himālaya, the husband of Menakā, father of Durgā and father-in-law of Śiva.

of these balls are placed in an earthen pot. Fire is set to them and the pot is floated on a tank. An equal number of cakes (but in Jessore 144 cakes) are made of ground rice boiled in sweetened milk and are eaten by the worshippers, who, as before, are young girls. This ceremony must also be observed for four years. The form described above is reported from Jessore, 24-Parganas and Midnapur. A miniature tank is not an indispensable adjunct in those districts. In Mymensingh, however, a miniature tank is always used, and the ceremony is similar to that of the Bel Pukur Brata described below, except that balls made of cowdung and chaff are substituted for the clay balls used at the Bel Pukur. The following is a specimen of the verses recited at the morning worship of the *tuṣ* balls in Midnapur. The translation is very rough, as the Bengali verses are to a large extent a jingle in which the meaning is sacrified to the rhyme.

TUṢ TUṢĀLU.

Tuṣ tuṣālu tuṣkarṇī
Sāge bhāte puṣkarṇī.
Gāi bāchur sariṣār phul
Āmrā pūji bāp māyer kul,
Bāp māyer dhan nāṛi cāṛi,
Svāmīr dhane adhikāri.
Ghar karbo nagare,
Marbo sāgare.
Tuṣ tuṣālu māi, tuṣ tuṣālu bhāī,
Tomār kalyaṇe āmi cha buri piṭhe khāi.
Cha buṛi piṭhā Gāṅge bāli Gāṅg sināne yāi.

TRANSLATION.

"We worship our parents' families, chaff balls, the tank with rice and vegetables, the cow, the calf and the mustard flower. We are dependent on the wealth of our parents till we acquire a right to the wealth of our husbands. We will make our home in the town; we will die where the Ganges meets the sea. Chaff balls, you are our mother and our brother. By your blessing I eat six score cakes. Six score cakes like sand in the Ganges. I will go to bathe in the Ganges."

One of the few instances of miniature tank worship in Behar is found in the Baṭsābitrī, which is observed in Muzaffarpur in the month of Jyaiṣṭha. A tank is dug in the courtyard and a branch of the banyan tree is placed in it. It is then worshipped by married women with sweets, flowers, *āipan* (rice ground with turmeric) and vermilion, and prayers are offered that their husbands may be long-lived and like Śiva. There seems to be no corresponding observance in Bengal.

Jyaiṣṭha.

In Murshidabad an image of Ṣaṣṭhī is placed beneath a branch of the jack tree which is planted on the bank of a

miniature tank for the Araṇya Ṣaṣṭhī Pūjā on the 6th day of the moon in Jyaiṣṭha.

The only instance of tank worship in Āṣāṛh is the Karomāditya, which is observed in Mymensingh. On the last day of Āṣāṛh a tank is dug inside the house and filled with milk. Offerings (*naibedya*) are made and the husbands are worshipped.

Bhādra.

The Jituā Pūjā is observed in Jalpaiguri in Bhādra. It is performed in order to obtain anything which the worshipper particularly desires, and is not limited to any particular object. Small fishes are placed in the water of the miniature tank, and its banks are adorned with moss and grass.

On the last day of the month the Bhādai Pukur ceremony is performed in Rangpur by little girls who wish to unite themselves by a tie of friendship. Miniature tanks are dug and connected with one another. *Kalmī* (*Ipomœa reptans*) and *pānā* (*Salvinia Cucullata*) shrubs and fishes are placed in the tanks whilst small wooden boats are floated on their surface. and *naibedya* or rice offerings are placed on the banks. There is music, and the relatives and friends of the children are feasted.

Jimutbāhan.

The chief tank ceremony of Āśvin, variously known as Dviti-bāman, Dvitiya-uṣā, Po-jeonta and Jimutbāhan. takes place on the 8th day of the dark half of the month. the day on which Dviti-bāman or Jimutbāhan, the son of the Sun, in whose honour it is held. was born. Its object, when performed by barren women. is to obtain children, and, when performed by others, to secure longevity for their offspring. Failure to perform it brings still-born children, death of offspring and widowhood. It is only performed by married women. Its form varies somewhat in different parts of the province (it is only in vogue in Bengal and Orissa), but the miniature tank is always present. In Angul it is customary for the worshippers to perform a preliminary ceremony after bathing on the previous day, when the female kite and the female jackal are worshipped at the *ghāṭ* and food is only taken once. On the day of the *brata* itself they fast all day and go in the evening to the tank, which is made at cross roads. Above the tank is a bamboo roof covered with new cloth and hung with garlands. A cocoanut and a *tulsī* plant are placed in the tank, a bundle of sugarcane is put at its side, and around it twenty-one kinds of edible fruit collected by each worshipper are arranged in baskets. The ceremony is performed sometimes by a Brāhmaṇ widow and sometimes by one of the worshippers with rice, milk, turmeric and flowers, and the story of Dviti-bāman is recited. The fruit is then taken home. Part is given to the neighbours, and the rest is cooked, and, after a portion has been offered to Dviti-bāman, the female kite and the female jackal, eaten by the worshippers and their relatives.

Elsewhere a square tank is dug in the courtyard, and

is somewhat differently adorned. In Bonai fishes are placed in the water, and the kite and jackal are represented by clay figures on the banks, on which branches of *bel*, *mahuā* (*Bassia latifolia*) plantain, sugarcane and other trees are planted. In Talcher, cowries and turmeric are put into the tank besides the fish, and a betel-nut smeared with sandal and decorated with flowers—the symbol of the god—is placed on a miniature island in the middle.

The Gārusi Brata is performed in Mymensingh on the last day of Āśvin by married women who have lost their mothers-in-law. The tank is dug near the household *tulsī* plant, *pānā* is placed in it, and it is worshipped with flowers and *dūrbbā* grass. A clay pig is sacrificed, and eight kinds of vegetables are first presented and then cooked and eaten.

The period comprising the month of Kārttik and the first eight days of Agrahāyaṇ is known as Yamāṣṭaka, when, on account of the unhealthiness of the season, the eight gates of the domain of the god of death are never closed. It is in this month, therefore, that Death is propitiated by young girls of seven years or less in the Yama Pukur or Kārttik Pukur Brata. The ceremony is observed throughout Bengal with the exception of the northern districts of Jalpaiguri and Darjeeling, although, as in the case of many of the *brata* described in this paper, it is gradually dying out in the towns with the spread of Western education. The forms vary considerably in detail, and in Bhagalpur, its north-western limit, the differences are so great as to call for a separate account.

Kārttik.
Yamapukur.

In Bengal proper the tank is rectangular in shape, the longer sides running from north to south, and is usually dug close to the household *tulsī* plant, but in Tippera close to the plinth of the house. Various aquatic plants, such as *kalmī*, *śuśni* (*Marsilia Quadrifoliata*), and *pānā*, one or more small fishes, and, in Birbhum, seven snails, are placed in the tank, which is refilled each morning. Paddy is sometimes sown or planted in the centre. In Rangpur seven *ghāṭs* are made and each is filled with turmeric, ginger, *tusī* and flowers. Various shrubs such as *hiñcā* (*Enhydra fluctuans*), ginger, *tulsī* and turmeric are planted round the tank, and, in Burdwan, *rabi* seeds are sown. The corners are sometimes marked with *kacu* (*Colocasia antiquorum*), *kalā* (plantain), *mān* (*Alocasia indica*), and *halud* (*Curcuma Longa*), and sometimes with branches of the banyan tree. In Birbhum seven cowries are placed on the southern *ghāṭ*. In Tippera a small earthen plate of rice is placed near the tank. Clay figures are often put on the banks. These sometimes take the form of Yama and Yamī. In Tippera his followers Yamaduta and Kaladuta are added. In Howrah they represent fishermen, dhobis and their wives, and women who collect aquatic plants. The idea here appears to be that these people, who are those who make the most frequent use of tanks, are appointed witnesses to testify to the due performance of the ceremony

before the god of death at the day of judgment. In Eastern Bengal clay figures of two crows and two kites are posted at the corners, and in some districts vultures or other birds are made to hover over the tank on sticks. The clay figures are brought daily in an earthen pot and arranged for the day's worship and are put back again when it is over. The worship is usually performed by the girl herself, but in Rangpur the family priest recites the *mantras* and worships fourteen Yama. Elsewhere Yama is worshipped with flowers, paddy, *dūrbbā* grass, and vermilion. In Tippera the girl dips the *dūrbbā* grass in water and touches each of the clay figures, calling on them to drink. After the ceremony, when she has put away the clay figures, she sits down with a few blades of *dūrbbā* grass in her hand and listens to the account of the Yama Pukur which is given by an elderly woman of the family. The story is to the effect that there was once a man whose wife was devoted to the worship of Yama. Her mother-in-law was displeased because she paid so much attention to Yama, and scoffed at her. After a time the mother-in-law died during her son's absence. On his return he performed the Śrāddha but his mother's soul would not accept it, as Yama was tormenting her with thirst because she had scoffed at her daughter-in-law for worshipping him. The son asked his mother's soul how the god could be appeased, and was told to get his wife to perform the Yama Pukur ceremony with great pomp. She also appeared in a dream to her daughter-in-law and begged her to have mercy on her. The ceremony was accordingly performed and the soul found rest.[1]

The Yama Pukur Brata is performed daily from the last day of Āśvin to the last day of Kārttik. It must be finished before sunrise. It has to be performed for four years. The effects are to secure for the worshipper, her parents, her future husband's parents and her ancestors, blessings in this world and relief from torment after death. Speedy marriage, a good husband, and chastity, are also prayed for. The following is a specimen of the *mantras* used in Midnapur :—

Yama Pukur.

Śuśni kalmī laha laha kare,
Rājār beṭā pakṣī māre,
Māruk pakṣi śukāk bil,

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1 Such is the story generally current. Other accounts of the origin of the Yama Pukur are—(i) A wife was so attentive to her husband that she had no time to attend to religious ceremonies. On her death she was greatly terrified, expecting to be condemned for her neglect. She accordingly came down to earth and performed the Yama Pukur *brata*, which so pleased Yama that he pardoned her and gave rest to her soul. (ii) A certain queen had done good works during her lifetime, and on her death Yama promised to grant her any boon she might ask. She requested that she might be restored to life, and her prayer was granted on condition that she performed the Yama Pukur ceremony.

Sonār kāṁṭār rupār khil,
Kāgā bagā sākṣī thāk,
Yama pukurṭi pūji;
Yamer māsī sākṣī thāk,
Yama pukurṭi pūji;
Yamer khuṛī sākṣī thāk,
Yama pukurṭi pūji;
Yamer jeṭhāi sākṣī thāk,
Yama pukurṭi pūji.

TRANSLATION.

"The *śuśni* and the *kalmī* plants are waving. The Rājā's son is killing birds. He kills the bird. The tank is dried (to recover the bird). A golden box with silver hinges (is found). Crow and crane bear witness that I am worshipping the Yama Pukur. Let Yama's maternal aunt bear witness that I am worshipping the Yama Pukur. Let Yama's paternal aunt and grand-aunt bear witness that I am worshipping the Yama Pukur."

The miniature tank, though usual, is not essential in Orissa, where the ceremony is known as Kārttik Pukur. Girls who find the form described above too difficult offer flowers, plantains and various shrubs to Rādhā Kṛṣṇa after performing their ablutions, and on the last day a plantain trunk is floated in the water with lighted earthen lamps upon it.

In Bhagalpur the Kārttik Pukur Brata is performed on the same days as the Yama Pukur in Bengal, though on account of the difference in the calendar it falls there from 15th Kārttik to 15th Agrahāyaṇ inclusive. It is performed by brides during the first year of their married life with the object of securing the bridegrooms from death. A miniature tank is always employed among high-caste Hindus, but the village tank is often used by others. The former is in this case clearly substituted for the larger tank by those who do not appear in public. The miniature tank is dug in the courtyard. Five vermilion marks are made on each bank and twelve varieties of grain are sown there. A pole is planted in the centre, and a boat with rudder and sail is floated on the surface. The girl who is performing the ceremony may not bathe during the entire period of thirty days. The tank is worshipped early every morning after the necessary ablutions have been performed, and no food or drink may be touched until the ceremony for the day has been completed. Old paddy is offered during the first fifteen days, and new paddy for the remainder of the period. The paddy is kept in two *koṭhis* made of cowdung, one for the old and the other for the new paddy. An oblong cowdung cake is made on each of the first fifteen days, and a round cake on each of the other days, and all are arranged at the side of the tank in a line which is called *Rākhi Caṭṭi*.

After the daily offering of paddy has been made, the chief

woman of the house, who supervises the ceremony throughout, tells the story of the Kārttik Pukur:—There were once five girls who were great friends. One day one of them, who was a Goālin, found the others, who belonged to the higher castes, performing the Kārttik Pukur Brata. In answer to her enquiries they told her that by performing the ceremony they could obtain anything they desired from the guardian of the tank, and, in particular, that they would not be left widows; but that she could not imitate them, as, being only a Goālin, she would not have the endurance to abstain from bathing and eating *chāli* and to perform the various rites with sufficient strictness. Paying no heed to their warning, the Goālin joined enthusiastically in their worship, but on the fifteenth day she secretly bathed and ate *chāli*. The god of the tank was very angry and tormented her by nightly visits. He came on a black buffalo, tore and dirtied her clothes and disarranged her hair. In the morning her husband's sister, seeing the condition of her clothes, accused her of an intrigue and at last informed her husband. Her brothers then took her to task, and, on being told the story, decided to watch secretly in order to test its truth. At midnight they found themselves face to face with the god, who explained that their sister was suffering a just punishment for her sins and that they could only be expiated by a rigid performance of the ceremony from the beginning. This was done. Shortly before the end of the month's worship, the Goālin wished to give a feast to her brothers and sisters, but at the last moment found that she had no fuel. She sent her servant to get some, and, whilst she was absent, cut the woman's child to pieces in order to test the powers of the god. The servant, returning with the fuel, met a line of ants, and strewed fresh *dūrbbā* grass and sugar for them. Gratified by this attention they requested her to ask a favour of them. On her replying that she desired nothing, they told her that her mistress had killed her child, and said that she would find it alive. The miracle was performed, and the penitent Goālin never again doubted the power of the gods.

The worship for the day is then completed by the pouring of four libations of water brought from a river or tank by a woman whose husband is alive, in the name of the cow, of the mother, of the mother-in-law and of the worshipper herself in that order.

On the fifteenth day some paddy is spread on the banks of the tank. When dry, the girl measures out thirty-two *pailās*—sixteen in the ordinary manner and sixteen with the *pailā* inverted. The paddy is again spread out and no attempt is made to scare the birds away.

On the last day of the *brata* at the end of the morning's observances, a she-calf is placed across the tank with its fore-feet and hind-feet on opposite banks, and the worshipper is made to pass under it, assisted by her brother, or, in his absence, by her brother-in-law.

What remains of the paddy is then collected and ground, and sixteen large and sixteen small rice cakes (*piṭhā*) are made by the worshipper, who, in all these processes, may use the right hand only. The girl fasts the whole of the last day, and at dead of night eats the two ends of each of the large rice cakes. If the voice of any living thing reaches her ears whilst she is eating, she must at once stop and may not swallow any food that may be in her mouth. The remainder of the large rice cakes is then distributed among her relatives and neighbours. Four of the smaller rice cakes are placed on the roof as the share of the crows; four underneath a *tulsī* plant as the share of Viṣṇu; four at the foot of a plantain tree as the share of her mother; and the remaining four at the side of the tank for her mother-in-law.

After the conclusion of all the ceremonies, the cowdung *koṭhi* and cakes are destroyed; marks of rice paste are made on the surface of the tank, and it is then filled up.

Nāgāli Caturthī.

In Angul a miniature tank is made at the foot of the household *tul-ī* plant on the fourth day of the light fortnight of Kārttik. It is filled with milk, water, aquatic plants, and plantain shoots, whilst sugarcane and paddy are planted on its banks. Figures of the snake godlings, Nāg and Nāginī, made of rice paste, are placed beside it, near a piece of earth taken from an ant hill, their favourite haunt. They are worshipped with rice, milk, sugar and flowers, usually by girls and women, though men occasionally join them. The observance of this Nāgāli Caturthī is connected with a Purāṇik story about a woman who recovered her eyesight by worshipping Nāg and Nāginī. The worshippers apply some of the milk and water, with which the tank is filled, to their eyes, with the object of securing themselves against eye diseases of various kinds.

Chaṭ Barat.

The Chaṭ Barat is observed throughout Behar and also in part of Chota Nagpur on the 20th, 21st and 22nd Kārttik, and again, though not universally, on the corresponding days of Caitra. High-caste women sometimes substitute a miniature tank for the river or tank at which the ceremony is usually performed. The rites are the same in either case.

The worshippers, who are either men or married women, fast on 20th but take a little food at night. On the evening of the 21st they go, after fasting all day, to a tank or river, dip themselves and offer *arghya* by pouring milk and water over a basket full of cakes, cocoanuts, plantains and other fruits. They may eat part of the contents on coming out of the water, but the same ceremony must be performed again before sunrise, facing eastwards. The deity worshipped is the sun. In Chota Nagpur, where this *brata* is also performed on the last Sundays of Baiśākh and Agrahāyaṇ, flowers and eatables are at the same time thrown into the tank in honour of Baruṇ—the chief of the water gods. In Shahabad, clay figures of Chaṭ and Chaṭī are

worshipped at a well or tank during the ceremony, and the contents of the basket are afterwards distributed amongst the neighbours and relations of the worshippers.

Agrahāyaṇ—Bel Pukur and Sāṁjuti.

The Bel Pukur is worshipped from the last day of Kārttik to the end of Agrahāyaṇ for four years. It is not as widely observed as the Puṇya Pukur Brata, which it closely resembles, the only marked difference being that clay balls are substituted for the cowries or *bel* branches at the corners of the tank, and is not found west of Jessore. In addition to the prayers for chastity and a good husband, curses are in some places called down upon the prospective *Satinī* or co-wife. The Sāṁjuti Brata takes the place of the Bel Pukur in the western districts and is specially directed against the co-wife. As its name implies, it takes place in the evening. In several districts no tank is used, but figures of gods and heroes, of the temples of Mahādeva and Bhagavatī, of the sun and moon, of the Jamunā and Ganges or of household utensils, are invariably drawn on the ground with rice paste and worshipped with flowers and *dūrbbā* grass.

The following are among the verses recited at the Bel Pukur and Sāṁjuti :—

BEL PUKUR PRĀRTHANĀ.

Rāmer mata pati pāi,
Sitār mata sati hai,
Var yena sukhī hay,
Satinī yena mare yāy,
Satinīr hok nāk kān kāṭā,
Āmār hok sonār pāner bāṭā,
Satin habe svāmīr do,
Āmi haba svāmīr so,
Satinīr pathe paṛbe kāṁṭā,
Āmār habe sonār beṭā,
Satin habe āmār dāsī,
Āmi karbo hāṁsi khusi,
Svāmir haba sohāginī,
Aṁstā kuṛ jhāṁṭibe satinī.

SĀṀJUTI.

Sāṁjai pūjā sāṁjuti,
Bāṛa ghare tera bāti,
Lakṣmīr ghare ghaṭṭi.
Ghaṭṭi (tule māllām caṛ) thuye māgi bar,
Āmār bāp bhāi dhan daulate lakṣmīśvar.
Hut biṛāli hut khā,
Bhātār put thuye satin khā.
Guyā gāch begun gāch guṭi dhare mājā,
Bhāi hayechen dillīśvar bāp hayechen rājā,

Ākāśe yataguli nakṣatra tataguli bhāi,
Śiva Vasu pūjā kare daure ghare yā.
Rājāder beṭi dolāy āsen dolāy yān,
Candan kāṣṭhe rendhe khān.
Bāp rājā bhāi pātra,
Svāmīr māthāy rāj chatra.
Hātā hātā hātā,
Khāy satiner māthā.
Beṛi beṛi beṛi,
Satin beṭi ceṛi.
Khorā khorā khorā,
Satinke laye yāy tin minṣe gorā.
Bāṁś bāṁś bāṁś,
Satiner hay yena yakṣmā kās.

TRANSLATION.

Prayer at the Bel Pukur.

"May I have a husband like Rām; may I be chaste like Sītā, and may my husband be happy. May my co-wife die. May her nose and ears be slit, but may I get a golden bowl. May my husband hate her, but may I be his best beloved. May her path be strewn with thorns, but may I have a golden son. May she be my slave whilst I pass my days in laughter. May I be my husband's darling, but may my co-wife spend her time in sweeping the dust bin."

"For Sāṁjuti, the evening *pūjā*, place thirteen lamps in twelve rooms and a pitcher in Lakṣmī's room. Placing the pitcher in Lakṣmī's room I will ask this boon:—May my father and brother be lords of wealth. May the wild cat eat the offering, and spare my husband and son, but eat my co-wife. The betel palm and the egg plant bear fruit. My brother has become lord of Delhi and my father has become king. I have as many brothers as there are stars in heaven. I run home after worshipping Śiva and the Vasu. The daughter of kings comes and goes in a palanquin and uses sandalwood for cooking. My father is king, my brother minister, and the royal umbrella is spread over my husband's head. May the co-wife's head be eaten, may the cursed co-wife be a slave. May three white men take her away and may she die of consumption."

Other Agrahāyaṇ Brata.

In Shahabad, where the Bel Pukur is unknown, similar clay balls are used in the Aghaṇ-Piṇḍi Pūjā. They are placed at the front door of the house and worshipped with songs and fruit by girls, who fast until after the performance of the ceremony.

Nāṭai Pūjā.

In Jalpaiguri the Nāṭai Pūjā is observed by every unmarried Hindu girl on each Sunday in Agrahāyaṇ. An image of Nāṭai is made from a plantain

stem about six inches in length and placed beside the miniature tank, whose banks are daubed with rice paste and adorned with marigolds and mustard and *kalmī* flowers. The tongue, which protrudes like that of Kālī, is made of the pointed end of a *karabī* leaf (*Nerium odorum*), and the arms of *kacu* stems. The tongue and the eyes are reddened with vermilion. Rice cakes are offered to the goddess at dusk. Half are made with salt and half without. At night they are eaten before a lamp by the unmarried girls, and those who get the salted cakes have the best chance of marriage in the course of the year. The main object of the ceremony is to obtain a desirable bridegroom, but it is also efficacious in securing the recovery of lost treasure and reunion with absent friends.

In Chittagong, where the Bel Pukur is also unknown, maidens collect small plants of paddy and *kalmī* and worship the sun each Sunday in Agrahāyaṇ with prayers for an ideal husband.

In Khulna a miniature tank is filled with milk and water. A bundle of paddy set with rye flowers is planted by its side, and Gaurī, the goddess of plenty, is worshipped with offerings of *Pāṣāṇ* or hard cakes. These are subsequently eaten and from them the ceremony derives its name of Pāṣāṇ Caturddaśī.

This and the Agrahāyaṇ Ṣaṣṭhī ceremony, which only differs from it in that Ṣaṣṭhī, the guardian deity of children, is worshipped instead of Gaurī, are probably in their origin harvest festivals.

The Pāṭai Pūjā is performed in Jalpaiguri by matrons, with the object of averting sterility, or a tendency to miscarriage or to bear still-born children, or harm to children already born. It

Pauṣ.

closely resembles the Nāṭai Pūjā but in this case the image is made of *binnā* (a kind of straw), and is adorned with mustard flowers and marigolds. The ceremony is performed in the evening. The worshippers fast all day, and, after the completion of the *pūjā*, partake of the cakes cooked in milk and sugar which have been offered to the deity.

The Dhanya Pūrṇimā Brata is observed in Noakhali on the night of the Pauṣ full moon. A plantain and a bamboo are planted beside a miniature tank and the moon is worshipped with flowers and *dūrbbā* grass by a priest.

The Māgh Maṇḍal Brata continues for the whole month and

Māgh.

is concluded on the last day by a Brāhmaṇ. It is observed only in Central and Eastern Bengal. A full-sized tank is sometimes used, but a miniature tank is more commonly employed. Three series of concentric circles representing the sun and moon with the earth between them are drawn on the ground in the courtyard. After bathing, unmarried girls recite *mantras* to the sun and scatter flowers over them. A representation of the phallic emblem of Śiva is made of a plantain sheath and floated on the tank. Prayers are offered for an ideal husband, and are sometimes combined with curses on the co-wife. The following are among the verses recited. :—

Māgh Maṇḍal Brata.

Sūryya āschen dhalā ghoṛāy caṛe,
Āsben sūryya basben khāṭe,
Nāiben thuiben Gaṅgār ghāṭe,
Culgāchi mele diben cāmpār ḍāle,
Kāpaṛ khāni mele diben baṛa gharer cāle,
Khāiben laiben subarṇer thāle,
Bhājā khāiben rikābi rikābi,
Bhāla tarkāri khāiben koṭarā koṭarā,
Ambal khāiben khādā khādā,
etc., etc., etc., dadhi kṣīr miṣṭānna, etc., etc.
Uṭha uṭha sūryyare jhikimiki diyā,
Nā uṭhite pāri āmrā iyaler lāgiyā.
Iyaler pañcaguṭi kiraṇe thuiyā,
Sūryya uṭhben kon khān diyā ?
Bāmaṇ baṛir ghāṭā diyā.
Bāmaṇga meyerā baṛa seyān,
Paitā yogāy behān behān.
Uṭha sūryya uday diyā,
Nabīn pāitā galāy diyā,
Rāṅgā lāṭhi hāte kare,
Simul gāmchā kāndhe kare,
Sūryya uṭhben kon khān diyā ?
Baṭ aśvatther āgā diyā.
Baṭ aśvattha melana pāt ;
Sūryya ṭhākur Jagannāth.
Āmer baul āsere bāṛī bāṛī,
Sūryyer baure dei āmrā pārsī sāṛī.
Āmer baul āsere bāṛī bāṛī,
Sūryyer baure dei āmrā Bānārasī sāṛī.
etc., etc., etc., etc.
Āmer baul āsere locā locā,
Sūryyere dei āmrā cikkaṇ kocā.
etc., etc., etc., etc.
Kāni bagi bagi tuita āmār sai,
Māgh maṇḍaler brata karte ghāṭ pāinu kai ?
Āche āche la ghāṭ-Bāmaṇ bāṛir ghāṭ,
Rāt pohāle bāmaṇrā paitā māje tāta.
Paitār kaclāinā jal pukurete bhāse,
Tā dekhe māilāni khaṭ khaṭāye hāse.
Hāsis kene la māilāni tuita āmār sai,
Māgh Maṇḍaler brata karte ghāṭ pāinu kai ?
Āche āche la ghāṭ—Baidya bāṛir ghāṭ.
Rāt pohāle Baidyerā pūjā kare tāta,
Tāhār sothlāinā jal pukure, etc., etc.

Translation.

"The Sun is coming riding on a white horse. He will sit on a *cārpāi* and bathe and rise at the Ganges *ghāṭ*. He will spread

his hair on a *cāmpā* branch (*Michelia champaca*) and will spread his clothes on the large house. He will eat from a golden plate. will eat fried food dish after dish, and good curry, cup after cup, and quantities of acid things, curds, sweetmeats, etc., etc.

O Sun, rise up with thy brillant rays. We cannot get up because of the mist. The five strata of the mist keep back the rays. Where will the Sun rise? By the *ghāt* of the Brāhmaṇ's house. The Brāhmaṇ women are very clever and offer sacred thread morning after morning.

O Sun, rise up, put a new thread round thy neck, take a red stick in thy hand and a cloth red like the flower of the cotton tree on thy shoulder. Where will the Sun rise? He will rise over the banyan and the pipal. O banyan and pipal, expand your leaves. The Sun is god and lord of the world; mango blossoms appear in every house; we give the Sun's wife a persian *sāṛī*. Mango blossoms appear in every house; we give the Sun's wife a benares *sāṛī*, etc., etc. Mango blossoms come in profusion; we give the Sun a *dhoti* of flowered muslin, etc., etc., etc.

O blind Bagi, thou art my companion. Where shall we find a *ghāṭ* for the Māgh Maṇdal Brata? There is a *ghāṭ*—the *ghāṭ* of the Brāhmaṇ's house—where the Brāhmaṇs wash their sacred threads at daybreak. The water, purified by the threads, rises to the surface of the tank. Seeing it Māilāni laughs aloud. O Māilāni, why dost thou laugh? Thou art my companion. Where shall we find a *ghāṭ* for the Māgh Maṇdal Brata? There is a *ghāṭ*—the *ghāṭ* of the Baidya's house. The Baidyas worship there at dawn. The water used in their worship rises to the surface of the tank," etc. etc. (*mutatis mutandis* for other castes).

The Māgh Snān Brata is similar to that last described and is also observed in Eastern Bengal. The Earth, Sun and Moon are, however, only worshipped on the last day. On the other days the tank is worshipped with flowers, plums and *dūrbbā* grass, and an altar, built round a small plantain tree beside the tank, is adorned with similar offerings.

The Pūrṇamāsī Brata takes place in Mymensingh on the day of the Māgh full moon. A plum and a *bimmā* plant are placed beside a miniature tank and worshipped with rice and eatables by women for the welfare of their children. Pictures are made of rice paste on the ground near the tank.

One of the most curious forms of tank worship is the Pācāi Niṣṭār which takes place in Darbhanga in Caitra. It is performed by married girls only. The tank is dug in the courtyard at dawn by the brother of the worshipper or, in his absence, by her husband's brother. Bushes are placed round it and a pole similar to those in full-sized tanks is planted in the centre. After fasting for twenty-four hours, the girl takes her seat facing eastwards. Between her and the tank, under a canopy (which is kept from year to year), with the centre pole or *jāṭh* is a figure of Gaurī, made of turmeric. In front of it is placed a plantain leaf containing an offering of *arwā* rice, plantains and sugar.

Caitra Pācāi Niṣṭār.

Beside the girl are three earthen pots. Two stand on plantain leaves and contain *cuṛā* and *sāttu*. In the third is an earthen lamp. Behind her are placed a clay image of Gaurī and an empty *hāṇḍi* which represents the co-wife. The girl first worships the yellow Gaurī, and then, without turning, worships the clay idol with her left hand, to show her contempt for the co-wife. The worship is directed by elder women, who are invited to see it and are given presents on its conclusion. The ceremony is repeated for five years. The number of accessories of each kind increases with the number of years, so that in the last year five times as many articles are required as at first. In the last year the girl fasts all day after the ceremony, and at sunset enters the house and feeds a Brāhmaṇ virgin, to whom she also gives her clothes. The two girls and the worshipper's brother keep a vigil throughout the night. In the centre of the room is a coloured square of *solā* (*Æschynomene A pera*) on a *piṛhā* or plank. It is covered with a piece of cloth, and from each corner hangs a *solā* ball. All three have to get up three times during the night and hold up the *piṛhā* whilst the worshipper asks, "Has Niṣṭār been performed?" to which the others answer, "Yes." In the morning the *solā* square and the images of Gaurī are thrown into the tank, and on the worshipper's return to her home a feast is given by her husband.

Other Caitra Brata.

Basanta Rāy is worshipped in Mymensingh in Caitra and Baiśākh. The tank is dug three days before the ceremony and plantain trees are planted on three sides, that nearest the house being left open A bride and bridegroom are made of plantain stalks and dressed in red cloth. They are married, and the women sing whilst the bride is turned seven times round her husband. Next morning a goat is sacrificed to Bhairab at the riverside, and the mock bride and bridegroom are thrown into the water.

Occasional Ceremonies.

Besides the above there are several forms of tank worship which are not limited to any particular month At the Punarbibāha the husband and wife utter purifying *mantras* beside a miniature tank at the time of the first menstrual flow.

The Bāṛī Bibāha is the name given to the ceremony in which, in Bengal, the bride and the bridegroom bathe in a similar tank on the day after marriage. An analogy is to be found in the worship of the Ganges by newly-married couples in Behar. When a visit to the Ganges is impossible, they may make their offerings at some other river, or, failing that, at a tank. But until the ceremony has been performed, they may neither cross a river nor touch its water.

For the Dusuli Pūjā a miniature tank is dug at twilight and pictures are made with rice paste on its banks. It is worshipped with 30 betel boxes with some particular worldly object.

Dariā Pir is worshipped by pregnant women for safe delivery. About a seer of rice must be begged, fried and presented to the tank. Two images of a male and female are laid together on a

plantain leaf beside it. Fruit is presented by being laid on one side of the tank. It is then moved to the other side and eaten, and the images are thrown into the water.

Lastly there is the Subacanāi Pūjā. In Jalpaiguri a miniature tank is dug with twenty-one smaller tanks round it. The banks of all are painted with vermilion and *ālipanā* (rice paste), and a duck, made of powdered rice, is placed near the central tank. Offerings of *pān* (*Piper betle*), betel-nuts, vermilion, mustard-oil and plantains are placed in a cane basket. The tanks are worshipped at midday by mothers for the welfare of their children because the goddess Subaanāi is believed to have the power of restoring life to the dead. The story, which is recited by the oldest woman present, is that a certain Rājā threatened to put a Brāhman's son to death for killing his ducks. The boy's mother appealed to Subacanāi, the ducks were brought to life and the child was saved.

A ceremony of the same name is performed in Purnea in the second or light half of any month, but it bears no resemblance to that just described. It is performed by unmarried girls only, with the object of attaining wealth, happiness and good husbands, and lasts for a fortnight. Four tanks are dug and filled with milk, water, *dūrbbā* grass and vermilion. They are worshipped with flowers, rice, plantains and sandal-wood, whilst rhymed *mantras* are recited.

It is not easy to trace any idea which is common to all the tank ceremonies. The objects of several of them are identical, and it may be that further enquiry will show that they have a common origin. Others, however, differ widely, and it seems to be impossible at present to arrive at any very definite conclusion as to the reason for the introduction of the tank, which in some cases does not seem to be an essential at all.

62. *Salīma Sultan Begam.*—*By* H. Beveridge.

This lady was one of Akbar's wives and was probably the cleverest and most attractive member of his seraglio. She was both intellectual and tactful, and had much influence over her husband and his son Jahangīr. She had also a poetic vein, and one of her verses used to be famous. She was the niece of Gulbadan Begam, the authoress of the Memoirs of Humayun, and accompanied her on her pilgrimage and shared with her the dangers of a shipwreck in the Red Sea and the subsequent detention at Aden. By birth she was a cousin of Akbar, her mother being Gulrukh Begam, a sister of Gulbadan Begam and half-sister of Humayun the son of Babar and father of Akbar. Her father was Mīrzā Nūru-dīn Muhammad Naqshbandī, who was the son of Mīrzā Alāuddīn and belonged to a family of saints. Of Nūru-d-dīn we only know that he was Governor of Qanauj, and that he instigated Hindāl to rebel against his brother Humayun.

Salima was a widow when Akbar married her in 1561, her first husband having been the great Bairām Khān, the real restorer of the Moghul Empire. Humayun had promised Bairām that he would give Salīma in marriage to him as soon as India was conquered. When this was accomplished in Akbar's reign, all the ladies who had been left in Kabul came to India, and, in the end of 1557 or beginning of 1558, the marriage of Bairām and Salima was celebrated with great pomp in the city of Jālandhar in the Punjab. About three years afterwards Bairām fell by the hand of an Afghan assassin, and subsequently Salīma became the wife of Akbar. The exact date of the marriage does not seem to be known, but if Salīma accompanied Bairām to Guzrat she probably did not return to Agra till the middle of 969, February 1562, when her stepson Abdur-Rahīm (afterwards the famous Khān-Khānān) was brought to Akbar from Ahmedabad. The marriage therefore may have taken place then, though Blochmann puts it into 968. Salīma had no children by either of her husbands, but she seems to have attached herself especially to Prince Salīm (Jahangir), and when that foolish and wicked man quarrelled with his father, Salīma was deputed to Allahabad to bring him to a sense of his misconduct. She went there and was received with great respect by Jahangir who marched out two days' journey to meet her. She induced him to return with her, and she brought about a reconciliation between him and his father.

According to Jahangir's Memoirs Salima died at the age of sixty in December 1611. This statement of her age has always been a stumbling-block to me, for if it is correct Salima can only have been about five years of age when she was married to Bairām, and she must have been almost an infant when Humayun promised her to Bairām as a reward for the conquest of India. I was pleased, therefore, to find a note at p. 72*a* of B.M. M.S. on 171, Rieu I, 257, which stated that the writer had ascertained

that Salima died at the age of 76. She was born, he states, on 4 Shawwāl 945, 23 February 1539, and consequently about four years before Akbar (he was born 15th October 1542, so that she was his senior by about three years and seven months), and the chronogram of her birth was khūsh-hāl (Felix, and equal in *abjad* to 945). Her mother Gulrukh died four months after her birth. The note is in the handwriting of the copyist Mīrzā Muhammad, son of Rustum, known as Mūtamid Khan and son of Qubād known as Dīanat Khān, and so was written in 1148, 1735. But this copyist was not merely a scribe. He was also the author of a book of dates called the Tārikh Muḥammadī, Rieu III, 895*a*, which was written in 1124, 1712. The statement that Salīma died at the age of 76 is also given there, p. 140.

63. *Notes on the Pollination of Flowers in India. Note No.* 1—*The pollination of* Thunbergia grandiflora, *Roxb., in Calcutta.*—*By* I. H. Burkill.

A vigorous white-flowered plant of *Thunbergia grandiflora* grows over the porch of the house in Calcutta in which I live; and it is upon it that I have made my observations. It flowers from May to December profusely; but it has only once to my knowledge set any fruit—a single capsule,—although on one occasion I pollinated some half dozen flowers with the pollen of fresh flowers (both of white and mauve races) brought from Shibpur.

Fig. 1.—Flower of *Thunbergia grandiflora*, seen from in front and a little above. Nat. size.

The flowers of *Thunbergia grandiflora* in the hot weather and at least through August open in the night between 2-30 and 3-30 A.M. (local time); but as the cold weather comes on, they delay opening until towards or after dawn. In the hot weather they fall about 4 P.M., but in the cold weather they often do not fall until long after dark or on the next morning. They are obviously adapted for fertilisation by big bees such as *Xylocopa*, some of which are crepuscular in habit, and as Bingham [1] remarks (upon *Xylocopa rufescens*, a native of Sikkim, whence, with Assam, this white *Thunbergia grandiflora* comes) " on fine moonlight nights the

1 In Blanford's Fauna of British India, Hymenoptera, Vol. I. (London, 1897), p. 534.

loud buzzing can be heard all night long." I have never so far seen or heard any crepuscular bee in Calcutta.

With the dawn in Calcutta, *Xylocopa latipes* and, generally a little after it, *X. æstuans*, come to the flowers of the plant and visit diligently. If in August one watches at 5-30 A.M., these bees may be seen to arrive before the sun is up, and to commence work. They are still at work at 3 or 4 o'clock in the afternoon. When *Xylocopa latipes* visits a virgin flower, the visit lasts 8—10 seconds; if the flower is not virgin it lasts only 2—3 seconds. I find that it takes the bee 1—1½ seconds to find the honey, not that it does not know how to get at it, but that it has to thrust its proboscis in by such a crooked path, groping for the honey with the end of it. When the honey is found, and if the flower be virgin, the abdomen of the bee can be seen to beat up and down 20—25 times as it drinks. I notice that often the bee refuses to enter a flower which had been recently sucked, apparently recognising the fact by some mark or scent.

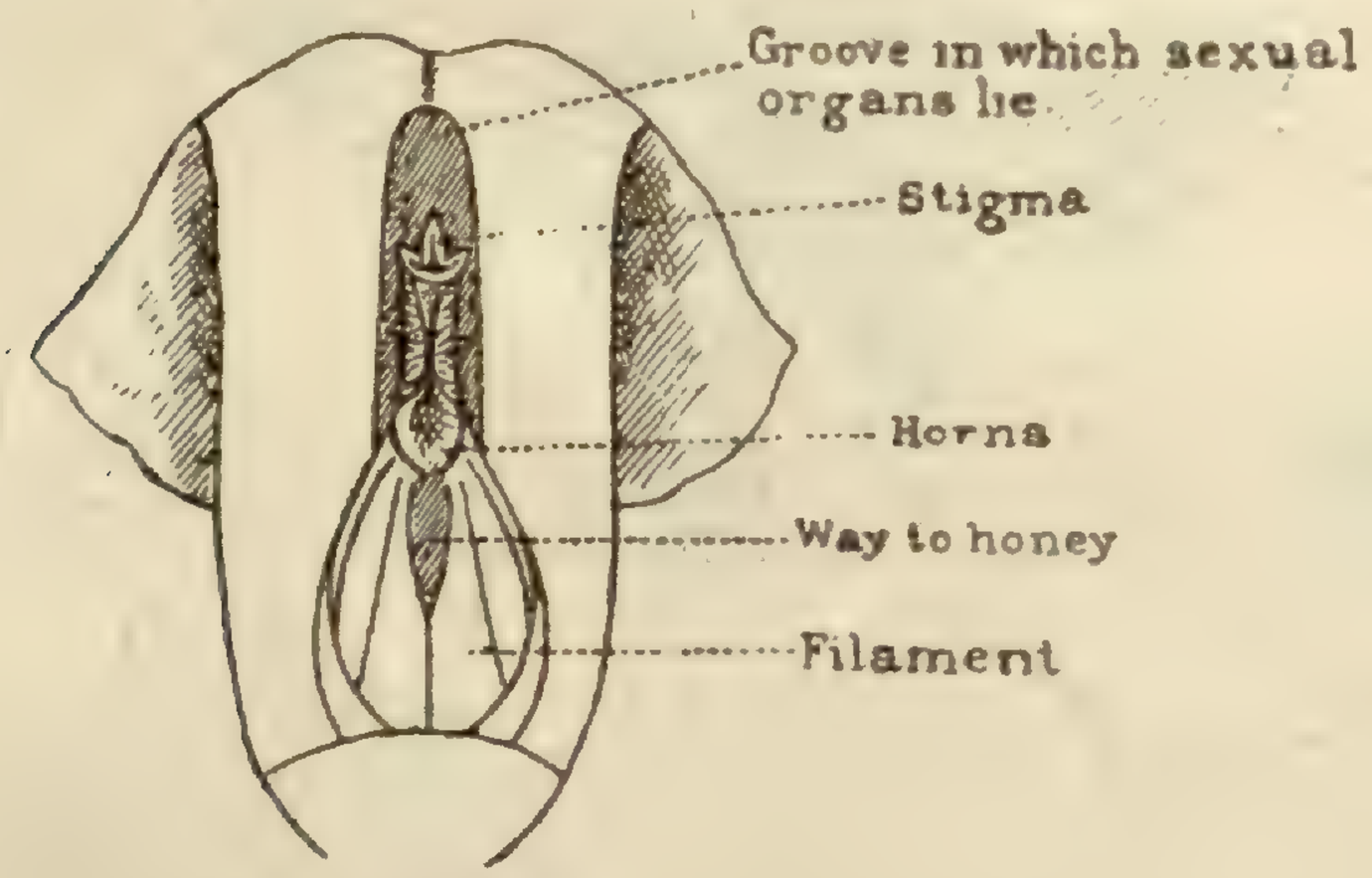

FIG. 2.—Roof of antrum, diagrammatic.

The bees, when they leave the flowers, are more or less abundantly dusted on the head and thorax with pollen; and invariably they leave some of this pollen upon the lower lobe of the stigma of the next flower which they visit. The flower itself seems to have no scent, but there is a faint scent emanating from the bracts or calyx outside, where there is a second (extra-floral) nectary visited by ants, and an occasional fly.

On the day before the flower will be open, and about noon, the two large bracts, which have enclosed the bud up till now, part; and thereupon this extra-floral nectary begins to secrete. There is no secretion at this time from the inner floral nectary, nor will there be until after midnight when the flower is preparing to open. The bracts themselves are covered with slimy glands; and ants suck them as well as the extra-floral nectary. Secretion continues at the extra-floral nectary after the fading of the flower; it only persists on the internal nectary so long as the flower lasts.

Xylocopa latipes is undoubtedly a most suitable visitor; its

large body fits the corolla tube exactly, and it can reach the honey with just that amount of difficulty which is necessary for the shaking out of the pollen onto its back.

This is the structure of the flower. The flower is altogether 6—7 cm. across and about the same in height; the honey lies about 4 cm. from the mouth. The antrum into which the bee enters is 2·0—2·5 cm. across and 1·5—2·0 cm. high from the ridge which runs along the middle of the floor to the roof. The stigma and the four stamens lie under the roof of the antrum so as to touch the back of the visiting Xylocopa. The stigma projects just beyond the anthers. The anthers are provided at their bases with rigid horn-like hooks and all along their margins with a fringe of long hairs; the hooks catch on the insect and cause it to shake a shower of pollen down onto its back from out of the long brushes of hairs which hold it. These horns have their tips one whole centimetre behind the edge of the lower lip of the stigma; the insect, therefore, touches the stigma at an appreciable interval before, on touching these horns, it shakes down the shower of pollen onto its back. The insect does not touch the anthers themselves as these lie in a groove. The filaments broaden to their bases, and the upper pair are interlocked at the base by a tooth and groove, making a direct road to the honey impossible. The honey chamber behind their insertion is 7—8 mm. in height and transverse diameter, and is 8—9 mm. long. The ovary stands in the middle of it, and the style passes above and between the bases of the upper pair of stamens to carry the stigma, as stated, to a position above the visiting bee's back. The nectary surrounds the ovary but is most developed below.

When I first examined the flower it seemed to me just possible that the honey could be reached by a proboscis passed between and below the lower stamens, but I soon saw that that was impossible, and after a little watching I was able, by means of small windows cut in the sides of flowers, to observe how the tongue of *X. latipes* reaches the honey. The bee settles on the floor of the

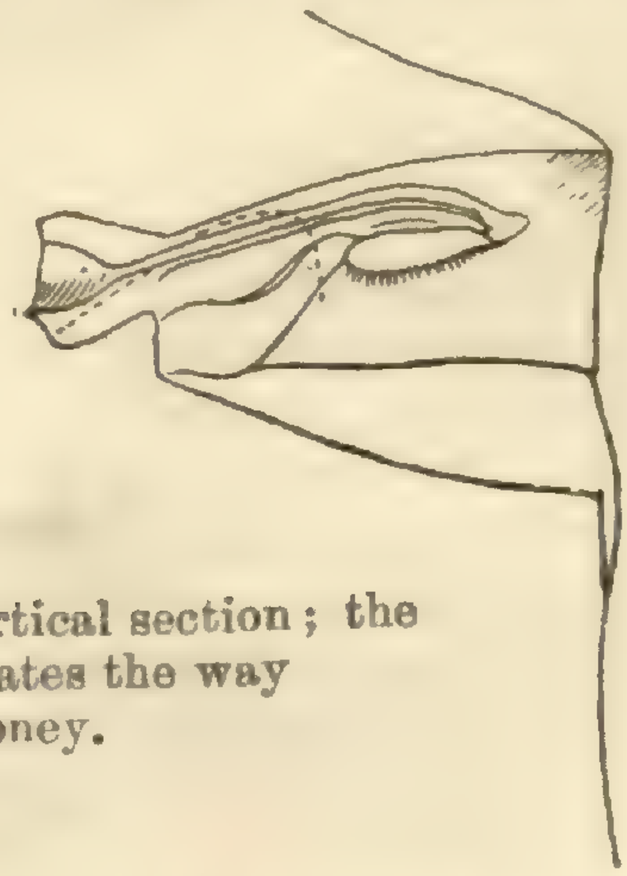

Fig. 3.—Flower in vertical section; the dotted line indicates the way to the honey.

antrum and pushes its way along it, touching first the stigma and then catching against the hooks of the anthers, and with its legs

in the effort bulging out the sides of the antrum so as to bring the roof a trifle lower ; it passes its tongue between the bowed upper filaments which are only 3 mm. apart, with the style between them, passes it round to one side of the style, the space being only just big enough for it (1 mm. across) and so into the honey chamber. As it enters the chamber above, and most of the honey is below, the tongue has again to pass round the style to reach it. The total length of the honey chamber from the point where the tongue enters, to the place where the honey collects, is 10—11 mm. A tongue length of 16—19 mm. is necessary to drain the flower.

Creeping insects very rarely enter the flower, and never seem to find the honey chamber.

Visitors in Calcutta—

HYMENOPTERA ACULETA. Apidæ. (1) *Xylocopa latipes*, Fabr., sucking honey, July, August, September, October, November. (2) *X. æstuans*, Lepel., sucking honey, August, September. (3) *Apis florea*, Fabr., collecting pollen, flying into the open antrum and settling on the anthers, leaving the flower by dropping onto the floor of the antrum, August, September, October, November. (4) *Apis dorsata*, Fabr. once an individual persistently trying to reach honey, hanging under the stamens, November. THYSANOPTERA. (5) *Thrips* sp. November.

Visitors to the extra-floral nectaries—Several species of ants.

I have seen this plant in the Assam forests, where it fruits fairly abundantly ; but I have not had any opportunities of watching it for insect visitors. Large black ants there patrol the inflorescences feeding at the extra-floral nectaries, and at the floral nectaries just after the fall in the corolla. They do not interfere with the *Mylabris* beetles which devour the corollas from inside.

64. *Notes on the Pollination of Flowers in India. Note No. 2—The pollination of* Corchorus *in Bengal and Assam.*—*By* I. H. Burkill.

Emile Lefrance (Ramie and jute in the United States, Washington, 1873, p. 16) says that "flies and butterflies keep away from the jute fields especially at the blossoming period. The peculiar odour of the flower and the bitter exudation of the leaves seem to be strongly repulsive to them, if not poisonous."

I find in India no support for this statement. Jute is a crop of districts much submerged during the rains, where conditions limit the insect-fauna in certain directions; but whenever there are insects on the wing, jute flowers obtain visitors from among them, though the visitors are possibly more abundant if there is land above flood level in the neighbourhood.

My work in the years 1902, 1903, 1904 and 1906 has taken me to the jute-fields all over Bengal; and as I examined crop after crop studying the races in cultivation, it has been a constant observation that two or more races may be grown in great proximity without becoming one; yet the cultivator rarely exercises discrimination in his selection of plants to be left for seed. At first I thought that I should be able to show that in the jute districts flower-visiting insects are not present in quantity, but I cannot satisfactorily do that. Instead the result of my work is to show that jute flowers do receive a considerable amount of attention from insects well built for effecting abundant cross-fertilisation. Why their influence is not distinctly apparent, I am as yet in no position to say.

I shall give my observations on *Corchorus capsularis* first, and thereafter those on the somewhat larger-flowered *Corchorus olitorius*. But first I have to express my great indebtedness to H. H. the Raja of Bardwan, and also to Babu Brajendra Kishore Roy Chowdhury of Gauripur, Mymensingh, for facilities given to me in my work at their Experimental Farms.

Corchorus capsularis, Linn.

In 1902, I visited the Bardwán Experimental Farm on August 23th. In 1903, I had a tent pitched beside the jute-plots, and was there on August 3rd, September 2nd, 3rd, 9th and 10th. In 1904, I visited the Farm on August 10th and September 22nd: and in 1906 I was there on September 15th. The first observations to be recorded were made during these visits.

Bardwán is outside the real jute area, and there is high sandy ground close to the experimental crops. Insects proved to be very abundant. There I first studied the mechanism of the flower; and afterwards I found that it does not vary from place to place.

The flowers of *Corchorus capsularis* open about 7-30 A.M.

and close in a clumsy fashion in the evening of the same day; I mean that they half close: and after midnight they cease to be shapely. By the dawn of the next day the petals are falling off. The anthers dehisce as the flowers open. They and the stigmas lie exactly at the same level. Self-fertilisation is insured in the absence of insect visitors, as I proved by means of linen wrappings whereby insect visitors were shut out.

Honey lies, half hidden, at the base of the flower, and secretion has already begun when it opens.

From about 8 A.M., throughout the day, I found the flowers to be visited at Bardwán by enormous numbers of *Apis florea* and by lesser numbers of other bees and butterflies. The Apis visits not without danger; for a yellow-green crab-spider was very common upon the plants and was never seen to be feeding upon any other insect; and very many individuals of *Vespa cincta*, Fabr., were hawking among the plants, flying quickly up and down through their tops and swooping down on some luckless Apis as it sucked, carrying it away, meanwhile apparently stinging it, and then setting on a leaf to devour it from the end of the abdomen upwards. I mention this circumstance chiefly because it illustrates the enormous numbers of individuals of the little Apis busy in the jute beds, and is quite opposed to Lefrance's statement that insects avoid the plant.

Apis florea began work upon the flowers immediately they opened, and was even seen trying to visit before they had opened. Its tongue is quite short and it lays its head among the anthers in the attempt to drain the flower. It turns to right and to left, frequently making three dips into one flower; and rarely it turns quite round. Some two hours after the opening of the jute flowers the butterflies named below began to visit and continued to do so through the heat of the day until evening. They are somewhat ill-suited visitors to the plant, their long tongues enabling them to reach the honey without touching the anthers and stigmas. The small bees are obviously the best agents. *Apis florea* can visit and drain the honey of 10—15 flowers per minute or 600 at least per hour, while *Apis dorsata*, which is a quicker worker, visits about 18 per minute. The skipper butterflies visit less than 10 per minute and often only one or two. A species of *Suastus* and *Telchinia violæ* were found to be fairly constant in visiting this Corchorus and a neighbouring yellow Composite—*Tridax procumbens*, Linn.

Visitors at Burdwan, August and September:—

HYMENOPTERA ACULEATA. Apidæ. (1) *Xylocopa latipes*, Fabr., sucking honey in 1906 only. (2) *Apis dorsata*, Fabr., sucking honey, fairly plentiful. (3) *A. florea*, Fabr., sucking honey and collecting pollen, always in great abundance. Scoliidæ. (4) *Elis* sp., sucking honey, fairly abundant. (5, 6, 7 and 8) Four small Aculeate Hymenoptera. (9) *Formicidæ*, a black ant, at honey in 1906. LEPIDOPTERA RHOPALOCERA: (10) *Terias*

sp. (11) *Telchinia violæ*, Fabr. (12) *Castalius rosimon*, Fabr. (13) *Suastus* sp. All these Lepidoptera sucking honey. HETEROCERA. (14) One Microlepidopteron, sucking honey. DIPTERA. Syrphidæ. (15) *Helophilus* sp., sucking honey. COLEOPTERA. (16) *Coccinella* sp., sucking honey.

Until recently Orissa has been more or less outside the jute area: but jute is now taking an extension in it. From August 22nd to August 27th, 1906, I was among the jute fields of Orissa, at Cuttack, Shishua and Jájpur. There is high land, sand-hills, etc., in the immediate neighbourhood of these places.

The flowers of *Corchorus capsularis* were seen to be freely visited by insects. A large bee of the genus *Xylocopa* (probably *X. fenestrata*, Bingham) was very constant near Cuttack, and also a large black wasp, and there were four butterflies visiting the flowers, *viz.*, a Hesperid probably of the genus *Parnara*, a *Lycaena*, a white butterfly and a *Danais*. All were at honey. Near Shishua, a wasp of the Eumenidæ was seen at honey. At Jájpur the Lepidoptera, *Parnara* (?), *Terias* and *Lyceana*, were again seen on the flowers together with the Hymenoptera, *Apis indica*, Fabr., *Apis florea*, Fabr., and an Eumenid. The Hesperid *Parnara* (?) was a frequent visitor.

Predatory wasps of a species different to that seen at Bardwán, were hunting smaller Hymenoptera among the jute tops both at Cuttack and Jájpur.

The chief part of the valley of the Bráhmaputra in Assam has, like Orissa until recently, been outside the jute area. In it at Goálpára on September 2nd, 1906, I saw *Xylocopa æstuans*, Lepel., diligently visiting the flowers of *Corchorus capsularis* for honey, and with it were many individuals of a little blue-ringed *Anthophora* (or *Nomia*) collecting both pollen and honey. An individual of the common butterfly *Terias* was also on the flowers sucking honey. At Goálpára, hills are close to the jute-fields.

I will proceed now to give the results of observations in the districts of Northern Bengal, and the contiguous districts of the new province of Eastern Bengal and Assam. My work at Pusa (District of Darbhanga), Purneah and Kissenganj (District of Purneah) and Siliguri (District of Jalpaiguri), was done in so much rain that insect-visitors could not possibly go abroad. My work at Forbesganj and Barsoi (District of Purneah), Dinajpur (District of Dinajpur), Jalpaiguri (District of Jalpaiguri), Fulchari, Bogra and Santahar (District of Bogra), at Gafargaon, and on the occasion of my first visit to Mymensingh (District of Mymensingh), was done in showery weather with intervals between the showers in which insects might have visited the flowers: but I saw none. But at Parbatipur (District of Dinajpur) on August 15th, 1906, I observed on the flowers two individuals of an *Eristalis* sucking honey, and also a red and black Coccinellid beetle. At Balajan on September 4th, 1906, in the south-west corner of the Goalpara District, three species of butterflies were seen to visit the flowers for honey,—a *Terias*, a

Danais and a white butterfly. And at Jagganathganj (District of Mymensingh), on September 4th, 1904, I saw on the flowers *Apis dorsata*, an Apid not identified, and a Syrphid fly of the genus *Helophilus* at honey, while pollen was being devoured by many individuals of a red Coccinellid beetle, which was present in considerable numbers. On the occasion of my second visit, September 6th, 1906, to Mymensingh, between that place and Gauripur, I saw a *Danais* and a white butterfly go to the flowers.

The districts of Northern Bengal are in no way so exposed to regular floods and submersion, as the places that I come to next —places on the large rivers with no high land near, where the land for the homestead has often been artificially raised and all the fields go under water annually. They are Serájganj (District of Pabna), Goalundo, Pachuria, Faridpur and Madáripur (District of Faridpur), Náráyanganj and Narsingdi (District of Dacca), Chándpur and Hájiganj (District of Tippera). At Hájiganj insects were very abundant, but not so at the other places, which I will take first and together. The insect most generally seen was the tree-nesting *Apis dorsata*: it was observed on the flowers in considerable numbers at Serájganj on August 12th, 1904, and again diligently visiting at Madaripur on September 19th, 1904, and at Goalundo on August 30th, 1904. Another insect was a black Apid, seen at Serájganj. The fly *Helophilus*, whose larva is aquatic, we at present believe, was seen at honey at Goalundo on August 30th, 1904. A red Coccinellid was seen eating pollen at Goalundo on the same date, at Pachuria, on August 30th, 1904, and at Chandpur on September 9th, 1906. A *Terias* butterfly was seen at Narayanganj on September 1st, 1904.

At Rámpur Boalia, in the Rájshahi District, Mr. R. S. Finlow, on August 28th, 1906, observed butterflies on the flowers.

The following is a statement of the insects seen on the flowers at Hájiganj, on September 10th, 1906, at a time when the jute fields were under two feet of clear brown jheel water, and there was nothing above the flood except the railway embankment, a raised road and the spaces on which the houses of the village stand, and these last had largely been under water. The day was fine until the evening. Three species of *Xylocopa* were very busy at honey on the flowers,—*X. latipes*, Fabr., *X. æstuans*, Lepel., and another which seems to be *X. fenestrata*, Bingham. *X. latipes* visited at the rate of thirty flowers a minute and *X. æstuans* at the rate of thirty-five. *Apis dorsata* was abundant, sucking honey, and *Apis florea* was represented by a small number of individuals. A black Apid of the size of *Apis dorsata* was present also. Of butterflies three species were flying from flower to flower in the jute fields, a *Terias*, a *Danais*, and a white butterfly. A beetle of the Coccinellidæ was eating pollen.

Among the jute tops, *Vespa cincta* was busy hunting small Apids; and innumerable dragon flies were present here as elsewhere, giving an additional contradiction to Lefrance's supposition.

All Visitors of Corchorus capsularis.

	Madaripur.	Goalundo.	Pachuria.	Hajiganj.	Chandpur.	Narayanganj	Mymensingh.	Jagarnathgunj.	Serajganj.	Parbatipur.	Balajan.	Goalpara.	Burdwan.	Jajpur.	Shiahna.	Cuttack.
HYMENOPTERA—																
Xylocopa latipes ...				×									×			
X. æstuans ...				×								×				
X. fenestrata ...				×												×
Apis dorsata ...	×	×		×				×	×				×			
A. indica ...														×		
A. florea ...				×									×	×		
Anthophora, sp. ...												×				
Eumenid ...														×	×	
Elis, sp. ...													×			
Other winged *Aculeata* ...				×				×	×				×			×
Ants ...													×			
LEPIDOPTERA—																
Danais, sp. ...				×		×				×						×
Castalius rosimon ...													×			
Telchinia violae													×			
Terias, sp. ...				×		×				×	×	×	×	×		
Lycaena, sp. ...														×		×
A white butterfly ...				×		×				×						×
Suastus, sp. ...													×			
Parnara? sp. ...														×		×
Microlepidopton ...													×			
DIPTERA—																
Helophilus, sp. ...		×						×						×		
Eristalis, sp. ...										×						
COLEOPTERA—																
Coccinellid ...		×	×	×	×			×		×			×			

Corchorus olitorius, Linn.

The floral mechanism of this is exactly like that of *Corchorus capsularis*. The flowers also open at the same time and the anthers discharge pollen in the same manner. If insect visitors be excluded, self-pollination gives rise to a supply of good seed. At midnight the flowers are no longer shapely, and by the next morning the petals are falling. The flowers open by time not by weather, and will expand on the wettest day.

Visitors at Burdwan—

HYMENOPTERA ACULEATA. Apidæ. (1) *Apis florea*, Fabr., sometimes trying to visit before the flowers open. (2) A black Apid. (3) A black and tawny Apid. All sucking honey.

Visitors at Chinsurah on September 16th, 1906—

HYMENOPTERA ACULEATA. Apidæ. (1) *Xylocopa æstuans*, Lepel., two individuals diligently sucking honey. (2) An Apid of the size of Apis dorsata, sucking honey. LEPIDOPTERA RHOPALOCERA. (3) *Papilio* sp. (4) A white butterfly frequently at honey. COLIOPTERA. Carabidæ. A small species, frequently feeding on pollen.

It is only in the Hooghly District and within the borders of adjoining districts that this jute is a commoner crop than *C. capsularis*, and I have not given to it the same attention that *C. capsularis* has had. But insects do not avoid the crops: and dragon flies and Vespa cincta find plenty of prey in them as in plots of *Corchorus capsularis*.

65. *Notes on the Pollination of Flowers in India. Note No. 3—The Mechanism of six flowers of the North-West Himalaya.*—By I. H. Burkill.

The following are wayside notes made in marching through the hills and valleys north and west of Simla, in May—the hottest and dryest month of the year, when the shade temperature at the lower levels passed daily far above blood heat.

Adhatoda Vasica, Nees.

The conspicuous flowers of Adhatoda Vasica are in spikes, but they open only a few at a time. They are large, white and honied. The plant grows as a small bush in waste lands and on the borders of fields very plentifully below 4,000 ft., and flowers from December to June.

The tube of the corolla is 12 mm. long and curved a little: near its base the lumen is constricted by four indentations from outside, a pair above and a pair below (rather diagrammatically represented in fig. 12); the dorsal pair are a little above the ventral pair as indicated in fig. 11. At this point there is a weal of hairs obstructing a free passage down to the honey: the sides of the tube are strengthened by the adherent filaments of the two stamens. There is a large humped platform for insects to alight on.

The flowers open in the evening by the falling away of the lower from the upper lip—an act which leaves the upper lip hooded over the green anthers. These green anthers are in contact at the opening of the flower, and the stigma just peeps over the top of them. A little after the opening of the flower the tip of the hood turns up a very little, making room for the stigma to lift itself from contact with the anther-lobes. The anthers dehisce downward, on the lower side exposing their pollen for the backs of visiting bees to rub it off. It is 4 mm. from the anthers to the top of the hump of the platform.

As the flower ages the stamens diverge and the empty anthers are no longer covered by the hood; they become 10 mm. apart or more. While this is happening, the upper part of the style curves so as to bring the stigma exactly where the anthers were. The flower is then in the female stage.

Two species of Bombus were seen on the flowers—*B. hæmorrhoidalis*, Sm., and another species, here called *Bombus B.*, at 1,600 ft., and *Xylocopa æstuans*, Lepel., at 2,000 ft., all sucking honey. Flowers that are not visited do not set any seed, and they are 90 to more than 99 per cent. of those produced in the rather dreary parts of the Sutlej valley, where, in May, these observations were made.

Dicliptera bupleuroides, Nees.

The flowers of Dicliptera bupleuroides are numerous enough to make the plant quite conspicuous on the road-sides and

dry half bush-clad slopes that it inhabits. It is an excessively common plant in the Simla Hills from the plains to 7,000 ft.: it is generally much stunted. The flowers are purple (magenta), very rarely white, and they are honied.

The tube of the corolla is 7—9 mm. long and twisted through half a circle, so that the morphologically upper lip with the stigma and anthers is below, and the morphologically lower lip is above. The upper lip having no function as a hood has become flat and is converted into a fairly broad landing stage: while the lower (ultimately upper) lip serves as a standand, having dark dots near its base. The twisting of the tube takes place in the half-grown flower and always towards the same side. Except that the twisting practically obliterates the lumen of the very thin-walled tube, there is no obstruction in the way to the honey. The outside of the corolla is hairy and below the twist is more or less protected against biting and robbing insects by the bracts (see fig. 6). The rectangular mouth of the tube is seen in fig. 8.

The flowers open at dawn and fall on the same day between 4 P.M. and midnight.

Insects visiting the flowers settle on the stamens and style, touching the anthers and stigma, which are 2 mm. apart, with the underside of their bodies. An *Anthophora* was seen on the flowers at Suket, 4,000 ft., and *Apis indica* was seen on the flowers in Simla at 7,000 ft., both sucking honey, the latter diligently. A wasp was found at Suket to bite through the corolla tube for the honey.

Morina persica, Linn.

The flowers are, in whorls, on a very conspicuous spike, white, honied, and sweetly but not strongly scented. The plant grows in the open on dry hill-sides at altitudes of 6,000 to 9,000 ft., flowering in May when the grass is short, and it has not many competitors. The following observations were made on May 21st, 22nd, and 23rd, 1906, on the hills both north and south of the valley of the Sutlej above Suni, not far from Simla.

The tube of the flower is 40—45 mm. long and contains honey in fair quantity: no obstruction of hairs or difficulty is offered in the lumen to the passage of an insect's proboscis, if only long enough. But a platform to settle on is not provided. The outside of the tube is somewhat glandular-hairy; and a hard calyx protects its lowest 5—6 mm. against the biters of corollas. Nevertheless, though rarely, *Bombus hæmorrhoidalis* bites the corolla, and steals the honey: the holes which it makes I have seen utilised afterwards by a small Apid.

The flower opens just before sun-down, and is then pure white: the stamens have already dehisced and the stigma is sticky with sweet juice. In the opening of the flower the lower three petals begin to separate from the upper two, and the lowest petal of all falls: a quarter of an hour later the lateral members of the lower trio turn outwards and downwards: then the upper

lobes spread exposing the stigma and two contiguous stamens: after about forty-five minutes from the appearance of the first crack in the bud the flower is fully expanded as drawn in fig. 1.

Fertilisation is affected by Sphingidae, which leave abundant signs of their visits in plumes adhering to the stigma. After a fine night, I found that almost every flower had been visited by them. Once at sundown I saw *Bombus hæmorrhoidalis* in vain trying to reach the honey from the throat of the flower. I saw no butterflies going to the flowers by day, though I watched for them.

On the second day, some fourteen hours after they open, the flowers become flushed with rose-purple on the corolla-lobes: and before the sun sets and the next night's flowers open, they wither.

Kerner, in his Pflanzenleben, ii., p. 349, translated as the Natural History of Plants, makes several statements regarding *Morina persica* in Europe that point to differences between the Indian plant and the European plant. The time of opening and withering is the same, but he figures the corolla lobes as projecting forward, and says that anthers do not dehisce in the bud but half an hour after the flower opens. Afterwards, he says, the stigma curls round onto the anthers.

Salvia lanata, Roxb.

The flowers are, in whorls, on a conspicuous spike, deep lilac and honied. The plant grows in the open on dry hill-sides at altitudes of 5,000 to 8,000 ft., and the spikes stand out of the short burnt-up turf of May. The following observations were made over a wide stretch of country both west and north of Simla.

The tube is 11—12 mm. long, widening much vertically: it contains honey in fair quantity, the way to which is blocked by the sterile half anthers, as in *Salvia pratensis*; a tooth on the sterile end is just seen at the entrance to the throat in a side view of the flower (see fig. 4). There is no obstruction within the tube beyond the sterile half anthers. The outside of the corolla is somewhat glandular-hairy, and the gamosepalous calyx is very glandular and for a length of 7 mm. protects the corolla-tube. Nevertheless, the corolla-tube is frequently bitten through, generally on the right-hand side, most probably by *Bombus hæmorrhoidalis*.

The flower opens in the early morning. The stigma projects from the hood as drawn: and the anthers are protected by the hood as indicated in fig. 4. A single stamen is drawn in fig. 5. There is a horizontal platform made by the lower lip, for bees to alight on: it is 7 mm. long. A bumble bee, alighting on the platform, touches with its back the projecting stigma, and then pushing with its head against the sterile anther lobes, brings the fertile anther-lobes down upon its back, just as in other Salvias.

A Bombus which I have not yet determined and may call *Bombus A*, was seen at 7,000 ft. on the flowers, going diligently from one to another.

Scutellaria linearis, Benth.

The flowers are in spikes and are conspicuous, but are not raised above the short grass of the dry slopes where the plant flowers in April and May. They are rose-pink with a yellow patch on the landing-stage of the lower lip, and are abundantly honied. They open in the early morning.

Observations were made on the flowers north and west of Simla, on both sides of the Sutlej valley.

The tube is 11—15 mm. long, rather narrow in the lower half, and slightly curved at the very base: in the upper half it broadens into the two lips. The lips are pressed very close together so that the tube is closed. There is no other obstruction to the tongues of insects, beyond the compression of the lips. The flower is intended for the visits of Bombi, which are strong enough to open the lips and adept enough to know how to get the honey. With their feet on the well-marked landing stage they have to raise with their heads the upper lip, a process which is contrived by pressing against the curious palatal plates (marked *p.* in fig. 10): on raising the hood the stigmas and anthers become exposed and the hood again returns over them when the lifting pressure is removed. These palatal plates are invaginations of the hood behind the lobe which is seen at the base of the upper lip in fig. 9.

The outside of the corolla is covered by fine hairs: the calyx hardly protects the tube at all at the base. *Bombus hæmorrhoidalis* bites every flower that it visits. It settles on the lower lip as if to suck honey in the proper way, then rapidly turns head downwards on the right-hand side of the flower and bites the tube just above the calyx: it busies itself with this work from dawn to dusk; and almost every flower examined had been robbed thus.

Teucrium royleanum, Benth.

The flowers are in whorls, on a moderately conspicuous spike, white with a very faint green tinge, and are honied. The plant grows in hedges and under trees, flowering in May. The following observations were made at Bilaspur on the Sutlej, 1,600 ft. above sea-level on May 12th and 13th, and at Suket, further north, on May 16th, 1906.

The tube of the flower is 8—9 mm. long and slightly curved: the bases of the filaments divide its lumen as in fig. 3, into a part which contains the style and a part which contains the honey. The lower lip forms a horizontal landing stage—a sort of spoon wherein insects may alight: the handle of the spoon has two pairs of teeth on it for compelling the insect-visitors to approach

the mouth of the tube under the anthers and stigmas, which stand exposed over the landing stage. The distal teeth diverge, but are not horizontal as is the case in some European species of the genus: the nearer teeth are vertical and parallel as in *Teucrium Chamædrys*. The outside of the corolla is not hairy: the gamosepalous calyx protects the lower half of it from the biters of corollas.

The flower is proterandrous, and when it has just opened the stigma is behind the stamens: it moves forward during flowering as indicated in fig. 2.

The flower is visited by an *Anthophora*: and this bee settles on the spoon with its head thrust between the divergent teeth and up to the parallel processes. A glance at fig. 2 will show how, in so visiting the flower, it touches the anthers when the flower is young and the stigmas first when it is old. The longer filaments of the two pairs of stamens elongate a very little during flowering and just carry their anthers to a point beyond that indicated in the figure. The stalk of the flower is less rigid than the stalk of the alighting platform, and bends a little under the weight of a suitable insect-visitor.

Explanation of the Plate.

All the flowers are represented exactly twice their natural size, and at the angles which they take in life.

Fig. 1. Flower of *Morina persica*.

Fig. 2. Flower of *Teucrium royleanum*; the early and the late positions of the style are dotted in.

Fig. 3. Section through the tube of *Teucrium royleanum* near the base to show the way in which the honied part of the tube is made small and the distribution of hairs in it.

Fig. 4. Flower of *Salvia lanata*, with the position of the stamens dotted in: s. is the tooth on the sterile anther-lobe.

Fig. 5. A stamen of *Salvia lanata* in the position that a bee makes it to take.

Fig. 6. Flower of *Dicliptera bupleuroides* with its bracts.

Fig. 7. Corolla and style of *Dicliptera bupleuroides* to shew the twist of the tube.

Fig. 8. Corolla of *Dicliptera bupleuroides* seen from the front and from slightly below.

Fig. 9. Flower of *Scutellaria linearis*, with the position of the stamens dotted in: the narrow lobe at the base of the upper lip hides the invaginations that make the palatal plates.

Fig. 10. Tube and hood of *Scutellaria linearis* seen from below, the lower lip having been cut away: p. the palatal plates.

Fig. 11. Flower of *Adhatoda Vasica* just after opening.

Fig. 12. Diagrammatic section through the tube of *Adhatoda Vasica* at the invaginations near its base.

66. *Note on the Common Kestril* (*Tinnunculus alaudarius*).—**By** Lieut.-Colonel D. C. Phillott, *Secretary, Board of Examiners.*

In the Kapaurthala State the Common Kestril is, by bird-catchers and falconers, called *Regi*, a name elsewhere in the Panjab given to the English Merlin. Amongst Panjab falconers generally, it is known by the name of *Larzānak* or "the Little Quiverer," and amongst Pathans by *Bād-Farukh*, probably a corruption of *Bād Khurak*, a term nearly equivalent to the English "Windhover." In the Chhach district of the Panjab (Lawrencepore, Hazru, etc.) it is called *Shikl*.

According to Blanford it builds in the Himalayas above 7,000 feet. On 12th June 1891, however, I took two young birds from a nest in the chimney of the church at Abbottabad, Panjab, the height of Abbottabad being about 4,000 feet. The young had no down left on the feathers, though the tail-quills were only about three inches long. I have also observed the Kestril during the breeding season in the Sulaiman Range, in the Rakhni Plain, Baluchistan, height about 3,500 feet, and at Fort Munro just above Rakhni, height about 6,000.

The Kestril is easily caught in a *do-gaza* with a mole-cricket (Panjabi *ghū,ān*) as a bait.

In the Chhach-Hazara District it is sometimes used as a *bārak* [1] for the English Merlin, two or three inches of the end of its tail being previously cut off.

According to the *Bāz-Nāma-yi Nāṣirī* [2] it is, round Bushire and in other parts of the *Dashtistān-i Fārs*, used in the following manner as a decoy for snaring saker falcons. Being caught and trained to "wait on,"[3] a string about twenty inches long is fastened to its legs, and at the end of the string is a small bunch of feathers. Thus trained and prepared, it is cast in the air to "wait on." From a distance it appears as though it were circling over a small bird in difficulties, and various birds of prey are attracted from far and near by the sight. As soon as a bird of prey draws near it, the Kestril, apparently of its own accord, settles on the ground, and the trapper produces a pigeon. "The moment," says the writer, "that the hawk seizes the pigeon, it falls into the snare"; but what particular kind of snare is adopted he does not inform us. Persian and Arab gentlemen, whom I have visited at Baghdad, Basra, Muhammarah, and Shiraz, have confirmed this description.

The same author says that he has himself seen the Arabs of *'Unayzah* and *Shammar* using the 'eyess'[4] kestril to train greyhound-pups that are intended for gazelle-hawking. The nestling is

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1 *Bārak*, a hawk used as a decoy: it has horse-hair nooses attached to its feet.

2 A modern Persian work on falconry.

3 'Wait on'; to circle high over the falconer's head waiting for the quarry to be flushed.

4 A young hawk or falcon taken from the nest (eyrie).

tamed and called to the fist till it is 'hard-penned.' It is then entered to jerboa-rats let loose at the end of a string. A rat with a broken leg is next released in front of a greyhound pup of "two months old" and the Kestril is cast off: the rat is taken after a few stoops. Next a rat with a broken leg is released before two pups of "three or four months old," and when the pups start in pursuit, the Kestril is cast off. The pups make a dash and the Kestril makes a stoop, and so on alternately till the rat is taken. After a few maimed rats have been taken by the pups and the hawk, a sound rat is released in front of the pups, but a thin strip of wood, three or four inches in length, is passed transversely through the rat's ears to prevent its entering a hole. Behind the pups, the Kestril is cast off. "It is obvious," says the author, "that two-month old pups cannot in the open country overtake or seize a sound 'two-legged rat.' After about thirty or forty stoops the rat is taken. The sport is just like gazelle-hawking with a *charkh* and greyhounds."

In an old Persian MS. on Falconry, written in India, it is contemptuously stated that, "The Kestril is of no use except that its feathers may be used to imp the broken feathers of Merlins." No wonder that, in the olden days of falconry, it was assigned to a "knave."

67. Anthropological Supplement.

6. *Two Persian equivalents for Peter Piper.*

The following are two Persian Equivalents for "Peter Piper":—

I. امشب سه شب است که در شبستان سیّخ هر سه سه شب سخت
شب سردیست شیخ شمس الدین *

Imshab si shab ast hi dar Shabistān-i Sayya<u>kh</u> har si si-shab sa<u>kh</u>t shab-i sardī 'st Shai<u>kh</u> Shams^{u}-'d-Dīn.

Shabistān is the covered and enclosed portion of the mosque: *rūzistān* is that portion open on all sides, the roof being supported by pillars.

Har si si-shab means the three consecutive nights, 'this night, last night, and the night previous to last night.

II. ز بُز دُزدي بُزي دزيد دزدى * عجب دُزدي ز بُز دز[1] بُز به دزديد

Z' buz-duzd-ī buz-ı duzdīd duzd-ī.
'Ajab duzd-ī z' buz-duz buz bi-duzdīd.

"From a goat thief, a thief thieved a goat;
A rare thief to thieve a goat from a goat-thief."

The following well-known verse gives the days of the month considered unlucky by the Persians:—

هفت روزي نحس باشد هر مهى
ز آن حذر كن تا نيابي هيچ رنج
سه وپنج وسيزده با شانزده
بيست ويك با بيست وچار و بيست وپنج

Haft rūz-ī naḥis bāshad har măh-i
Z' ān ḥazar kun tā na-yābī hich ranj.
Si u panj u sizdah bā shānzdah
Bīst u yak bā bīst u chār u bīst u panj.

"Seven days are unlucky in each month.
Avoid these if you wish to avoid ill;
The third, the fifth, the thirteenth, an
the sixteenth,
The twenty-first, and the twenty-fourth
and the twenty-fifth."

D. C. Phillott, *Lieut. Colonel.*

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[1] *Duz* vulgar for *duzd*.

7. *Note on the Jargon of Indian Horse Dealers.*

Besides the mercantile sign language detailed in Journal No. 7, Vol. II, 1906, some trades have a jargon of their own that amounts to a secret language. A horse-dealer, for instance, instructing an underling to go and examine a horse in a fair, with a view to purchase, might still say *jā,o theko*, the verb *theknā* being probably a corruption of *dekkhnā* ; but this, as well as most of the horse-dealers' jargon, belongs to a past generation. Old Panjab dealers, still living, remember the time when the following phrases were current amongst them :—

Horse, *gorpā ;* mare, *gorpī ;* fore-legs, *hāṭh* or *dastāuṛe ;* it has good fore-legs, *dastāuṛe māle ;* it has bad fore-legs, *dastāuṛe kason ;* bad, *bashaṛī ;* eye, *kilkiyān ;* tooth, *chhubāhī ;* bog-spavin, *lāsa ;* to examine, *hāzanā*. In discussing prices, too, a secret code used to be observed. The following list of numbers was collected with difficulty, by the writer, at various horse-fairs in the Panjab, various horse-dealers contributing odd numbers that had stuck in their memory. The numbers are given exactly as collected, discrepancies included. Writing on the subject an ancient *Dallāl* says, "These numbers are Pushtu, or if not Pushtu, then they must be some other language." As they are not Pushtu, we must conclude they are 'some other language' :—

½	*Nīm.*	20	*Sūtī.*
1	*Akel* or *Aspīna.*[1]	25	*Kafa*[2] *māle*[7] *sūtī.*
1½	*Akel nīm.*	30	*Gerī daigān.*[8]
2	*Yāz.*	35	*Kafa kaso*[9] *yā sūtī.*
3	*Gerī.*	40	*Yā suti,ān.*
4	*Gāpān.*	45	*Kafa māle yā sutī,ān.*
5	*Kafi.*[2]	50	*Kafa daigān.*
6	*Rekhī.*	60	*Geri sūtī,ān.*
7	*Rekhī-bas.*[3]	70	*Rekhi bash sūtī,ān.*
8	*Yāz bash.*	80	*Gāpān sūtī,ān.*
9	*Sar-ī bash.*	90	*Sar-ī aspīna kaso lāng.*
10	*Sar-ī aspīna.*	95	*Kafi*[2] *kaso lāng.*
11	*Sār-i māte.*[4]	100	*Lāng.*
12	*Sar-i yāz.*	125	*Māsha māle lāng.*
13	*Sar-ī geri.*	150	*Akel nīm lang.*
14	*Sar-ī gāpān.*	175	*Māsha kaso yāz lāng.*
15	*Sar-ī nīm.*[5]	200	*Yāz lang.*
16, 17, 18, 19	?[6]	225	*Yāz lang māsha male.*
		250	*Yāz nīm lāng.*
		275	*Māshu kaso gerī lāng.*
		300	*Gerī lāng.*

[1] It lingers in my mind that I have heard *aspīna* used for a rupee.
[2] In 5 and 95 *kafi* ; elsewhere *kafa.*
[3] *Bas* should apparently be *bash.*
[4] Why not *Sar-i akel ?* [5] Why not *Sar-i kafi ?*
[6] I was unable to obtain these numbers but logically 16, 17 and 18 should be *sar-i rekhi, sar-i rekhī bas, sar-i yāz bash.*
[7] *Māle* = "on, upon." [8] *Daigān* = *dahā'i.* [9] *Kaso* = *kam.*

325	*Māsha māle gerī lāng.*	600	*Rekhī lāng.*
350	*Gerī nīm lāng.*	700	*Rekhi bash lāng.*
375	*Māsha kaso gāpān lāng.*	800	*Yāz bash lāng.*
400	*Gāpan lāng.*	900	*Sar-ī bash lāng.*

1000 *Paṛe māle lāng.*

D. C. PHILLOTT, *Lieut. Colonel.*

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8. *A Muslim charm (Arabic) suspended over the outer door of a dwelling to ward off Plague and other sicknesses.*[1]

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

حَكِيْمُ بِحُكْمِكَ

اَللّٰهُمَّ اِنَّكَ حَلِيْمُ ذُوْ اَنَاةٍ وَلَا طَاقَةَ لَنَا بِحِلْمِكَ يَا اَللّٰهُ يَا اَللّٰهُ اَلْاَمَانَ

عَلِيْمُ بِعِلْمِكَ

اَلْاَمَانَ اَلْاَمَانَ مِنَ الطَّاعُوْنِ وَالْوَبَاءِ وَمَوْتِ الْفَجْاَةِ وَسُوْءِ الْقَضَاءِ وَشَمَاتَةِ الْفَجْاَةِ

اَلْاَعْدَاءِ وَبِذَا اكْشِفْ عَنَّا الْعَذَابَ اِنَّا مُؤْمِنُوْنَ بِحَقِّ مُحَمَّدٍ وَاٰلِهِ الطَّاهِرِيْنَ اٰمِيْنَ مُوْقِنُوْنَ

يَا رَبَّ الْعَالَمِيْنَ *

"In the name of God the Compassionate, the Merciful.

O God! Thou art { the Wise / the Clement,[2] / the All-knowing } and Thou art possessed of forbearance. There is in us no power to fathom Thy { Wisdom / Clemency[3] / Knowledge } O God!

---

1 This has been copied from one suspended over a house-door in Calcutta.

2 Any of these epithets may be used.

3 Alternative readings.

O God! Security, security, security!—from Plague, Epidemics, Sudden Death, Misfortune and the Rejoicings of Enemies: from these punishments, Good Lord, deliver us, for we are

of the { Believers. / Faithful. } This we ask through Muḥammad and his Holy Family. Amen, Lord of the Universe!"

Should a childless man read this charm twenty-one times on the 15th of *Sha'bān*, after the *maghrib* prayer, setting aside one pice after each reading and then give the pice to the poor, he will be blessed with offspring.

D. C. PHILLOTT, *Lieut. Colonel.*

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9. *Note on the Humā or Lammergeyer.*

The *Humā* or *Humāy*, so often translated 'Phœnix,' is not, as is commonly supposed, a fabulous creature: it is merely the Lammergeyer or Ossifrage. Sa'dī [1] says of it:—

همای بر همه مرغان از آن شرف دارد
که اُستخوان خورد و جانوری نیا زارد

"The Humā is, for this, of birds the king:
It feeds on bones and hurts no living thing."[2]

Jehangir, in his memoirs, writes:—

"Accordingly, on the 19th of the sacred month of *Muḥarram* 1035 A. H.,[3] We moved our Royal Standards towards Lahore. Previous to this it had been frequently represented to Us that in the Pir Panjal there existed the bird known as the *Humā*. People of that district stated that its food was fragments of bone, and that the bird was ever to be seen sailing in the air, seldom seated on the ground. Since our Royal Mind was greatly bent on investigating this matter, it was directed that, should any of Our Royal *Qarāvuls*[4] shoot one of these birds and bring it to Our Presence, he would receive a reward of a thousand rupees. It so happened that Jamāl Khān, a *Qarāvul*, shot one and brought it to Our August Presence. As it was merely wounded in the leg, it reached Us alive.[5] We directed that its crop should be examined. The crop was accordingly opened and was found to contain nothing but fragments of bone. The hillmen informed

---

[1] *Gulistān*, Chap. I., St. 15. [2] Eastwick's translation. [3] A.D. 1625.

[4] *Qarāvul* "a guard, a sentry," etc: in India, apparently the matchlock men that acted as guards and *shikāris*, and accompanied the royal elephants on hunting expeditions.

[5] *Bi-nazar dar āmad*: in modern Persian this would mean "appeared," and not as in the text "was viewed, seen."

Us that its food consists entirely[1] of bits of bone, and that it is ever seen sailing in the air questing, with its attention turned towards the earth; and that whenever it spies a bone, it seizes it in its beak, and rising aloft casts it on a rock and shatters it, and then descends and eats the shattered fragments. It therefore appears to us most probable that this is the *Humā* so well known by name."[2]

The Lammergeyer, however, does not confine itself to bone. I have seen one carry off a dead chicken *in its beak*. Once, too, in Baluchistan I saw one stoop at a covey of 'chukor.' A Pathan orderly galloped to the spot and brought back a 'chukor,' dead but still warm. Whether the Lammergeyer had killed it, or whether it had robbed it from some other bird of prey is possibly doubtful; but my party of seven or eight keen-sighted hillmen stated that the Lammergeyer had killed it, and this too was my own impression. An Englishman, a sportsman and a keen observer, told me that he had once seen a Lammergeyer chase a 'chukor' down a ravine, but did not witness the end of the chase. (As the 'chukor' was a solitary bird, it was perhaps a sickly one.) On another occasion, in the little hill-station of Shaikh Budin, near Dera Ismail Khan, I saw a Lammergeyer stoop repeatedly at a *mārkhor* kid on a narrow precipitous path on the cliff below me. At each stoop the mother brought her horns down to the 'charge' and effectually kept the assailant at bay. Blanford writes: "The stories, chiefly Alpine, of its carrying off lambs (whence its name of "Lammergeyer" or Lamb vulture) and even children, and pushing goats and other animals over precipices, are now generally discredited. It is somewhat doubtful whether this great bird ever attacks living prey, * * * ." Whether the Lammergeyer was really attempting to brush the kid off the cliff-side, or whether it was merely animated by that spirit of mischief that enters into birds as well as beasts, I cannot say.

The old Persian fable, that the man on whose head the shadow of a *Humā*[3] falls, will eventually become a king,[4] is well known; not so the modern Persian superstition, that he who shoots one of these auspicious birds, knowing it to be a *humā*, will meet his death within forty days.

D. C. Phillott, *Lieut.-Colonel.*

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1 *Madār* "centre," etc.: properly "its chief food," but the word is often incorrectly used to signify, as in the text, "entirely."

2 "Tüzuk-i Jahāngīrī"; *Jashn-i Bistumīn-i Nauroz*, page ۳۹۸ edition by 'Syud Ahmud, Ally Gurh,' 1864 A.D.

3 From *Humā* comes the adjective and proper name *Humāyūn*, "Fortunate."

4 کس نیاید بزیر سایهٔ بوم * ور هما از جهان شود معدوم

"What though the phœnix from the world take flight,
'Neath the owl's shadow none will ere alight."

Gulistan, Chap. I., St. 3, Eastwick's Trans.

10. *Notes on certain Shi'ah Ṭilisms.*

It is believed by the Shī'ahs that the following seven *ṭilisms* have been handed down direct from the *Twelve Imāms* and other great saints. These are generally inscribed on blank pages at the beginning of the Qur'ān or other religious books. There is a special *ṭilism* for each day of the week, and it should be simply looked at, not perused, after the morning prayer.

Saturday.

"He who regards this diagram on Saturday, will, till the following Saturday, under God's protection, be preserved from all calamities. He will further receive respect from kings and dignitaries of the State; all who meet him will love him; and he will also be protected from sudden death."

افوض	امري	الى الله	ان الله	بصير بالعباد
محمد علي	٥٣	٧٦	١٢٠٢	٧
١٧٣	ي	١٢	ع	١٧
٦	و ٧٠	٨١٧٥	١٩	١٧
١٨	١٧	٩٦	ع	١٠٧١
لا	اله	الا الله	محمد رسول	الله

Sunday.

"He who regards this diagram on Sunday will escape hell-fire; all things will be easy to him; he will be loved and respected by all people, high and low; and all his enemies will be vanquished."

انا فتحنا	لک فتحا	مبينا	يا سبوح	يا قدوس
ا	١١٦١	٩٧	١٨١	٣٦٨
٨٧	٧	٣	٥٩٥	٩٦
ع	ع ١٨	١٩٦	١٦٥	٥٥ع٥
٢ورا	٩٦	سح	ع	١٨
لا	اله	الا الله	محمد رسول	الله

Monday.

"He who regards this diagram on Monday will that day be, under God's protection, safe from all harms; and he will be saved from his enemies, from those that seek to injure him, and from the temptations of Satan; he will be loved by all and will be prosperous in all his undertakings."

نصر من الله	و فتح قريب	و بشر المو منين	فالله خير حافظ	و هو ارحم الراحمين
ا	١٨١	٨	٧	١٥
٨	ع	٨	١٧٣	٥ عـ
٦	ع ١	٢٧٢	٧	٨٦
٦٢	١٨	٣ع	٧	ع ١٧
لا اله	الا الله	محمد	رسول	الله

Tuesday.

"He who regards this diagram on Tuesday, will be under the protection of the Great Protector, and will be saved by God on High from the commission of sins, great or small, and will obtain his desires in this world and in the next."

يا نورالنور	يا منور	النور	يا خالق	الذور
٩١	١٨	٩٧١	٨	٩٤
٥٦٣	٧	٢٦	٧	٨٢
٢٢	٢٢	٢	٢	٣ ٤ ٥
٢٩	٥ ٤	١٤	٧٦	٤٤٥
لا اله	الا الله	محمد	رسول	الله

Wednesday.

"He who regards this diagram on Wednesday will be saved from all the ills and dangers of that day; he will be loved and respected by all, and the Lord Most High will accomplish his lawful desires."

يا الله	يا فتاح	يا الله	يا قدوس	يا رزاق
١	١٨١	٨١٨٨	١١٨	٩٨
٩	١٨	٧	٣	٣
٤	٤	٢١	٢٨٢	٣
١٤	٥ ٤	٤	٥ ٤	٥٢٥
١	٨١	١١	٢٨	٣

Thursday.

"He who regards this diagram on Thursday will be loved and regarded by all; he will obtain wealth, and, under the protection of God on High, will escape all dangers and be successful in this world and blessed in the next."

يا قدّوس[1]	يا ودود	يا الله	يا فتاح	يا سبوح
١	٢١	١٥٥	٧	٢٠٢
١٢	٧	١٣	٣	٢
عـه	ع	٩	٩	١٩
٢	٩	١٢٩	ع	١٩٩
٢	٣	٣١	٨	٦٩

Friday.

"He who will regard this diagram on Friday will find, on th at day, his enemies turned into friends; he will obtain his desires to the full and will be loved and respected; and he will be safe from all ills."

مليقا	مليقا	انت تعلم	مافي قلوبهم	مليقا
١	ع ١	٢	ع	١٨
ع	٥ عـه ٥	٥٥٧٨	١٢	١٢
٧٣	ع	١٢	٥ع	١٣
٥٢٥	ع	١٤١	ع ر١	ى٣
لا اله	الا الله	محمد	رسول	الله

D. C. PHILLOTT, *Lieut. Colonel*; and
MUḤAMMAD KAẒIM SHĪRĀZĪ.

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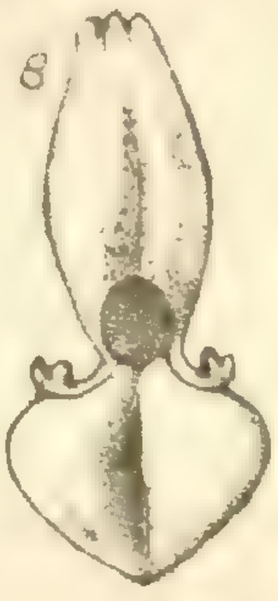
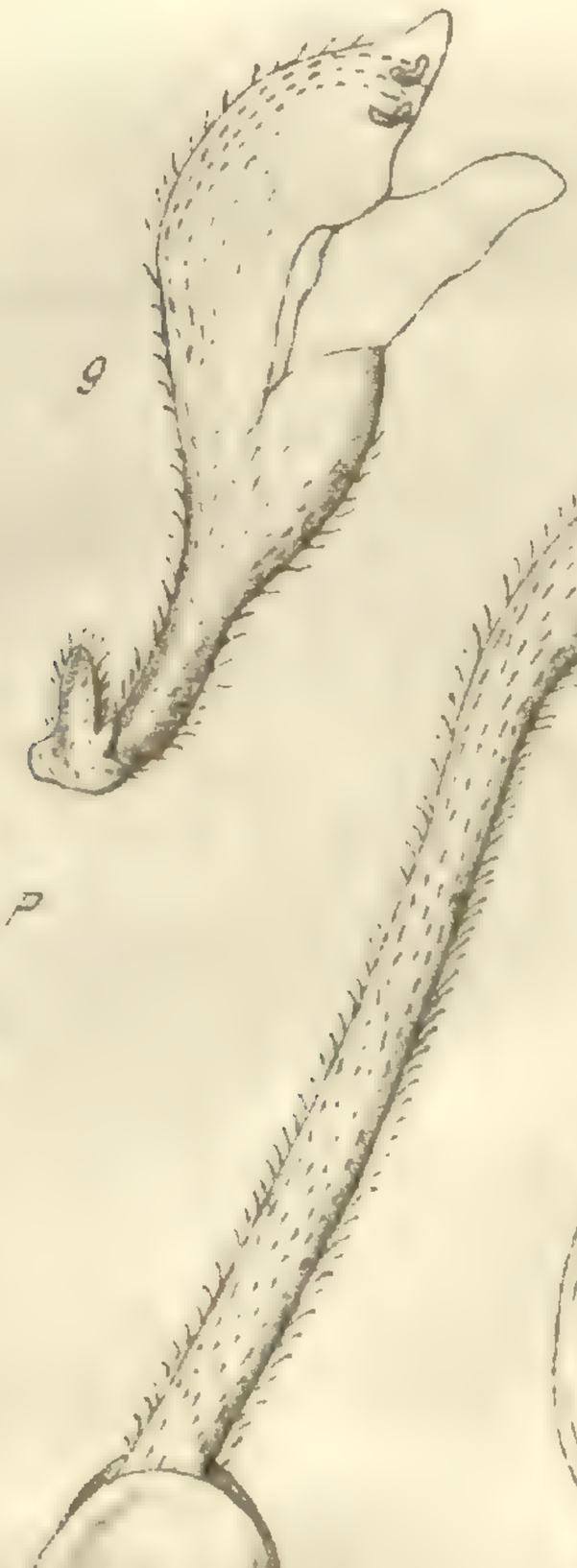
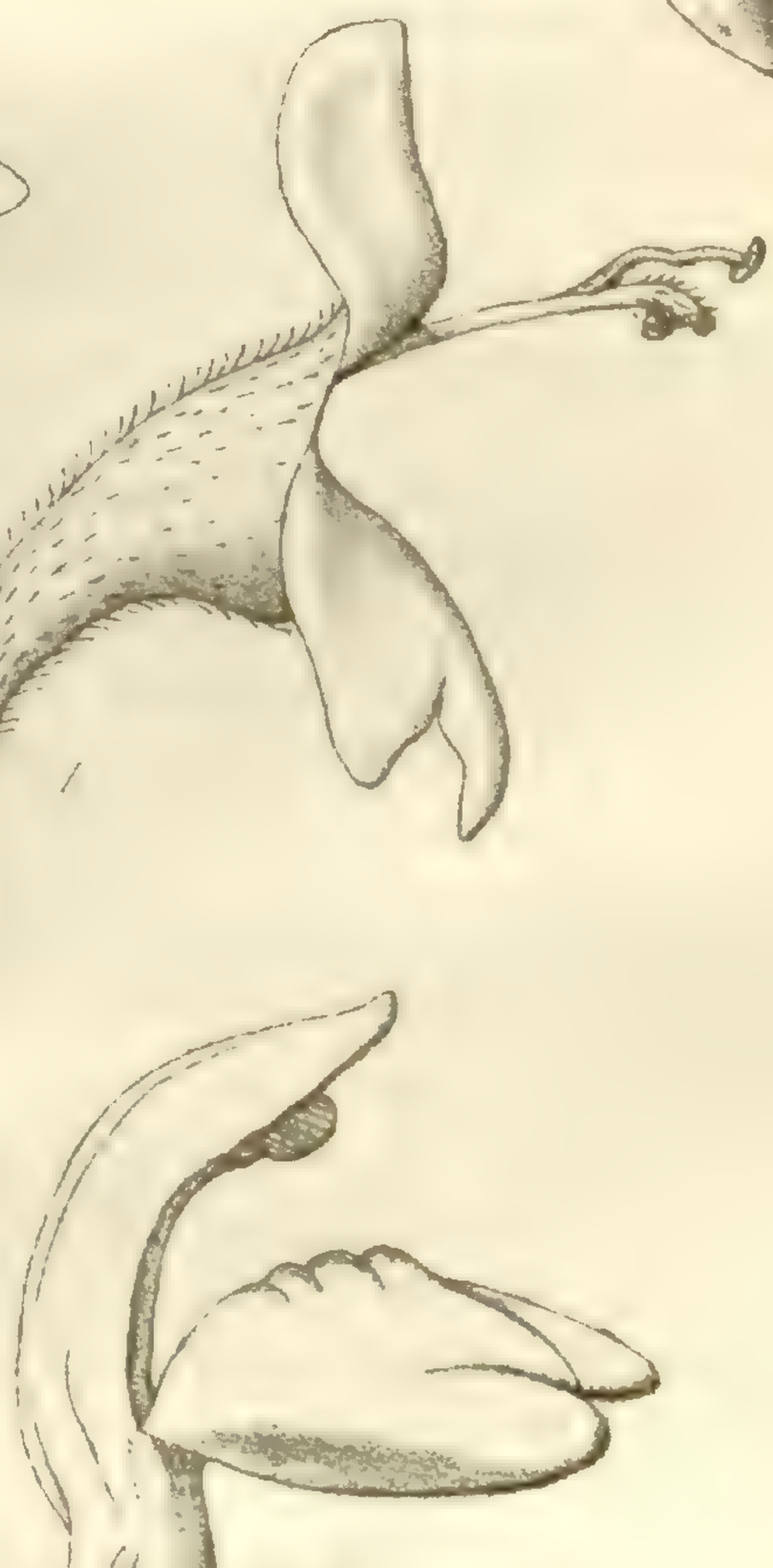
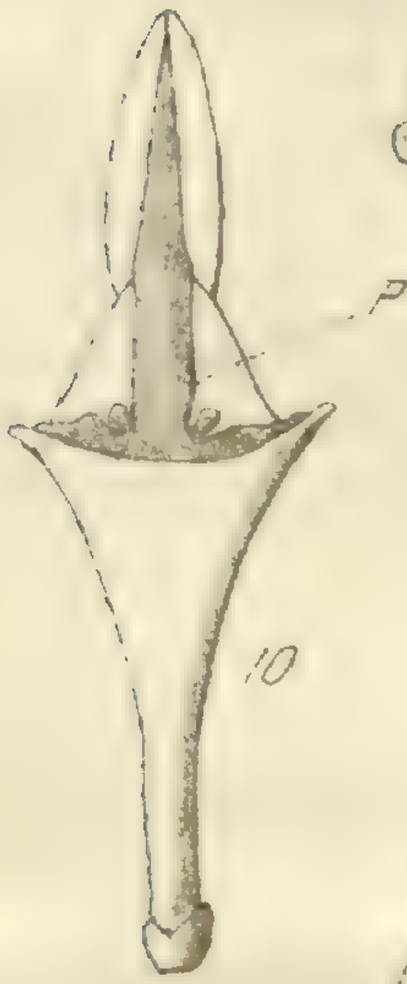
[1] An epithet frequently used in *Ṭilisms* is يا بدوح which seems to have no correct meaning.









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